

# SELF ASSESSMENT REPORT (SAR) UNDERGRADUATE ENGINEERING PROGRAMS (TIER-I) FIRST TIME ACCREDITATION





# DEPARTMENT OF CIVIL ENGINEERING

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#### **PART A: Institutional Information**

1. Name and Address of the Institution : Amrita School of Engineering, Amrita Vishwa

Vidyapeetham, Amritanagar PO, Ettimadai, Coimbatore – 641112, Tamilnadu.

2. Name and Address of the Affiliating University : Amrita Vishwa Vidyapeetham,

Amritanagar PO, Ettimadai, Coimbatore – 641112, Tamilnadu.

#### 3. Year of establishment of the Institution : 1994

#### 4. Type of the Institution:



#### Note:

1. In case of Autonomous and Deemed University, mention the year of grant of status by the authority.

2. In case of University Constituent Institution, please indicate the academic autonomy statu s of the Institution as defined in 12th Plan guidelines of UGC.

Institute should apply for Tier 1 only when fully academically autonomous.

#### 5. Ownership Status:

| Central Government         |                     |
|----------------------------|---------------------|
| State Government           |                     |
| Government Aided           |                     |
| Self - financing           |                     |
| Trust                      | <ul><li>✓</li></ul> |
| Society                    |                     |
| Section 25 Company         |                     |
| Any Other (Please specify) |                     |
|                            |                     |

## **Provide Details:**

Sponsoring trust of the institute is **MATA AMRITANANDAMAYI MATH**. Amrita School of Engineering is under the ambit of **AMRITA VISHWA VIDYAPEETHAM (DEEMED UNIVERSITY).** 

# 6. Other Academic Institutions of the Trust/Society/Company etc., if any:

| Other Academic Institutions of the Trust/Society/Company etc., if any: |                                   |  |                                  |  |
|--|-----------------------------------|--|----------------------------------|--|
| Name of the<br>Institution(s)  | Year of<br>Establishment          | Programs of Study  | Location                         |  |
|  |                                   |  |                                  |  |
| Coimbatore   |                                   |  |                                  |  |
| Campus   |                                   |  |                                  |  |
| Amrita School  |                                   |  | Coimbatore,                      |  |
| of Business,   | 1996                              | MBA  | Tamil Nadu                       |  |
| Coimbatore   |                                   |  |                                  |  |
| Campus   |                                   |  |                                  |  |
|  | hool<br><sup>ng,</sup><br>i, 2002 | <ul><li>B.Tech - Computer Science and Engg.</li><li>B.Tech - Electronics and Communication</li><li>Engg.</li></ul> | Amritapuri,<br>Kollam,<br>Kerala |  |
|  |                                   | B.Tech - Electrical and Electronics Engg.  |                                  |  |
| Amrita School  |                                   | M.Tech - Computer Science and<br>Engineering   |                                  |  |
| Engineering.   |                                   | M.Tech - Cyber Security  |                                  |  |
| Amritapuri,  |                                   | M.Tech - Power and Energy Engineering  |                                  |  |
| Kollam,<br>Kerala  |                                   | M.Tech - Robotics & Automation   |                                  |  |
|  |                                   | M.Tech - Thermal and Fluid Engineering   |                                  |  |
|  |                                   | M.Tech - VLSI Design   |                                  |  |
|  |                                   | M.Tech - Wireless Networks and   |                                  |  |
|  |                                   | Applications   |                                  |  |
|  |                                   | MCA  |                                  |  |
|  |                                   | Ph.D   |                                  |  |

## Table A.6 Other Academic Institutions of the Trust

| •  |      |  |             |
|--|------|--|-------------|
|  |      | B.Com - Bachelor of Commerce               |             |
|  |      | BCA - Bachelor of Computer Applications    |             |
|  |      | BBA - Bachelor of Business Administration  |             |
|  |      | M.Com - Master of Commerce                 |             |
|  |      | M.Sc. Chemistry                            |             |
| Amrita School                            |      | M.Sc. Physics                              |             |
| of Arts and                              |      | M.Sc Mathematics                           | A           |
| Sciences,                                | 2003 | MSW - Master of Social Work                | Kollam,     |
| Amritapuri,                              | 2000 | MA English (2 Year)                        | Kerala      |
| Konani,<br>Kerala                        |      | MA Philosophy                              |             |
|  |      | M.Sc. Physics & Maths - Integrated 5 Yr.   |             |
|  |      | Course                                     |             |
|  |      | M.Sc Chemistry - Integrated 5 Yr. Course   |             |
|  |      | M.Sc Mathematics - Integrated 5 Yr. Course |             |
|  |      | M.A English - Integrated 5 Yr. Course      |             |
|  |      | Ph.D                                       |             |
|  |      |  |             |
| Amrita Sahaal                            |      | B.Sc. Biotechnology                        |             |
| of                                       |      | B.Sc. Microbiology                         |             |
| Biotechnology,<br>Amritapuri,<br>Kollam, | 2005 | M.Sc. Biotechnology                        | Amritapuri, |
|  | 2005 | M.Sc. Bioinformatics                       | Kerala      |
|  |      | M.Sc. Microbiology                         |             |
| 1501 a1a                                 |      | Ph.D                                       |             |
|  |      |  |             |
|  | 2004 | BAMS                                       |             |

Department of Civil Engineering, Amrita School of Engineering, Coimbatore

| Amrita School<br>of Ayurveda,<br>Amritapuri,<br>Kollam,<br>Kerala |      | <ul> <li>MD - Ayurveda Samhita</li> <li>MD - Dravyaguna Vigyana</li> <li>MD - Dravyaguna Vigyana</li> <li>MD - Kayachikitsa</li> <li>MD - Panchakarma</li> <li>MD - Panchakarma</li> <li>MD - Rasashastra &amp; Bhaishajya Kalpana</li> <li>MD - Swasthavritta</li> <li>MS - Swasthavritta</li> <li>MS - Prasuti Tantra &amp; Streeroga</li> <li>MS - Shalakya Tantra (Netra Roga Vigyana)</li> <li>MS - Shalya Tantra (Samanya)</li> <li>Ph.D</li> </ul>   | Amritapuri,<br>Kollam,<br>Kerala |
|---|------|---|----------------------------------|
| Bangalore<br>Campus   |      |   |                                  |
| Amrita School<br>of<br>Engineering,<br>Bangalore,<br>Karnataka    | 2002 | <ul> <li>B.Tech - Computer Science and Engg.</li> <li>B.Tech - Electronics and Communication<br/>Engg.</li> <li>B.Tech - Electrical and Electronics Engg.</li> <li>B.Tech - Electronics and Instrumentation<br/>Engg.</li> <li>B.Tech - Mechanical Engg.</li> <li>M.Tech - Communication Engg. &amp; Signal<br/>Processing</li> <li>M.Tech - Computer Science and<br/>Engineering</li> <li>M.Tech - Embedded Systems</li> <li>M.Tech - Power Electronics</li> <li>M.Tech - Thermal Sciences &amp; Energy<br/>Systems</li> <li>M.Tech - VLSI Design</li> </ul> | Bangalore,<br>Karnataka          |

|               |      | M.Tech - Computer Science and            |        |
|---------------|------|--|--------|
|               |      | Engineering Data Science (Part Time)     |        |
|               |      | Ph.D                                     |        |
| Kochi Campus  |      |  |        |
|               |      | MBBS                                     |        |
|               |      | B.Sc Anaesthesia Technology              |        |
|               |      | B.Sc Cardiac Perfusion Technology        |        |
|               |      | B.Sc Cardio Vascular Technology          |        |
|               |      | B.Sc Diabetes Sciences                   |        |
|               |      | B.Sc Dialysis Therapy                    |        |
|               |      | B.Sc Echocardiography Technology         |        |
|               |      | B.Sc Emergency Medical Technology        |        |
|               |      | B.Sc Medical Laboratory Technology       |        |
|               |      | B.Sc Medical Radiologic Technology       |        |
| Amrita School | 2002 | B.Sc Neuro Electro Physiology            | Kochi, |
| of Medicine.  |      | B.Sc Optometry (Regular)                 |        |
| Kochi, Kerala |      | B.Sc Optometry (Lateral Entry)           | Kerala |
|               |      | B.Sc Physician Assistant                 |        |
|               |      | B.Sc Respiratory Therapy                 |        |
|               |      | BASLP - Bachelor of Audiology and Speech |        |
|               |      | Language Pathology                       |        |
|               |      | M.Sc Clinical Nurition Foods & Sciences  |        |
|               |      | M.Sc Medical Laboratory Technology       |        |
|               |      | (Biochemistry)                           |        |
|               |      | M.Sc Medical Laboratory Technology       |        |
|               |      | (Microbiology)                           |        |
|               |      | M.Sc Medical Laboratory Technology       |        |
|               |      | (Pathology)                              |        |
|               |      | M.Sc Biostatistics                       |        |

3

|  | M.Sc Deglutology & Swallowing Therapy  |
|--|--|
|  | (DSD)                                  |
|  | M.Sc Neuro Electro Physiology          |
|  | MPH - Master of Public Health          |
|  | MHA - Hospital Administration          |
|  | M.Sc - Cardio Vascular Technology      |
|  | M.Sc Diabetes Sciences                 |
|  | M.Sc Dialysis Therapy                  |
|  | M.Sc Physician Assistant in Medical    |
|  | Oncology                               |
|  | M.Sc Trauma & Crital Care              |
|  | M.Sc Respiratory Therapy (RPT)         |
|  | MD Anesthesiology                      |
|  | MD Biochemistry                        |
|  | MD Community Medicine                  |
|  | MD Dermatology, Venerology and Leprosy |
|  | MD Emergency Medicine                  |
|  | MD Forensic Medicine                   |
|  | MD General Medicine                    |
|  | MD Geriatrics                          |
|  | MD Microbiology                        |
|  | MD Nuclear Medicine                    |
|  | MD Paediatrics                         |
|  | MD Pathology                           |
|  | MD Physical Medicine & Rehabilitation  |
|  | MD Psychiatry (PSYCHOLOGICAL           |
|  | MEDICINE)                              |
|  | MD Radio Diagnosis                     |

|  | MD Radio-Therapy                         |
|--|--|
|  | MD Respiratory Medicine                  |
|  | MD Tuberculosis and Respiratory Diseases |
|  | MS General Surgery                       |
|  | MS Obstetrics and Gynecology             |
|  | MS Ophthalmology                         |
|  | MS Orthopedics                           |
|  | MS Otorhinolaryngology                   |
|  | DM Cardiac Anaesthesia                   |
|  | DM Cardiology                            |
|  | DM Endocrinology                         |
|  | DM Medical Gastroenterology              |
|  | DM Medical Oncology                      |
|  | DM Nephrology                            |
|  | DM Neurology                             |
|  | DM Paediatric Cardiology                 |
|  | DM Rheumatology                          |
|  | DM Pulmonary Medicine                    |
|  | MCh. Cardio Vascular & Thorasic Surgery  |
|  | MCh. Head and Nech Surgery               |
|  | MCh. Neuro Surgery                       |
|  | MCh. Pediatric Surgery                   |
|  | MCh. Plastic & Reconstructuve Surgery    |
|  | MCh. Gynaecological Oncology             |
|  | MCh. Reproductive Medicine               |
|  | MCh. G I Surgery ( Surgical              |
|  | Gastroenterlogy)                         |

|               |             | MCh. Urology<br>PG Diploma in Child Health (D.CH)<br>PG Diploma in Gynecology & Obstetrics<br>(D.GO)<br>PG Diploma in Dermatology, Venerology<br>and Leprosy (D.D.V.L.)<br>PG Diploma in Medical Radio Diagnosis<br>(D.MRD)<br>PG Diploma in Opthalmology (D.O.)<br>PG Diploma in Psychological Medicine<br>(D.PM)<br>PG Diploma in Otorhinolaryngology( D. L.<br>O)<br>PG Diploma in Medical Radio-Therapy<br>(DMRT) |          |
|---------------|-------------|---|----------|
|               |             | (DMRT)<br>PG Diploma in Medical Radiological<br>Sciences  |          |
|               |             | M.Phil Clinical Psychology<br>M.Phil Hospital Administration  | _        |
|               |             |   |          |
| Amrita        |             | B.Sc. Nursing   |          |
| College of    | 2002        | M Sc Nursing – Medical Surgical Nursing   | Kochi,   |
| Kochi, Kerala |             | M Sc Nursing –OBG Nursing   | - Kelala |
|               |             |   |          |
|               |             | B.Pharm   | _        |
| Amrita School | 1997 / 2004 | M Pharm - Pharmacy Practice   | Kochi,   |
| Kochi, Kerala | 177772004   | M Pharm - Pharmaceutical Chemistry  | Kerala   |
|               |             | M.Pharm - Pharmaceutics   | -        |

|               |      | M.Pharm - Pharmacology                     |        |
|---------------|------|--|--------|
|               |      | Pharm.D(P.B) 3 Year Course                 |        |
|               |      | Ph.D                                       |        |
|               |      |  |        |
|               |      | BDS  |        |
|               |      | MDS - Conservative Dentistry &             |        |
|               |      | Endodontics                                |        |
|               |      | MDS - Oral & Maxillofacial Surgery         |        |
|               |      | MDS - Oral Medicine & Radiology            |        |
|               |      | MDS - Oral Pathology & Microbiology        |        |
| Amrita School |      | MDS - Orthodontics & Dentofacial           | Kochi, |
| of Dentistry, | 2003 | Orthopedics                                | Kerala |
| Kochi, Kerala |      | MDS - Pedodontics and Preventive Dentistry |        |
|               |      | MDS - Periodontology                       |        |
|               |      | MDS - Prosthodontics and Crown & Bridge    |        |
|               |      | MDS - Public Health Dentistry              |        |
|               |      | Diploma in Dental Mechanics                |        |
|               |      | Ph.D                                       |        |
|               |      |  |        |
|               |      | B.Com - (Taxation & Finance)               |        |
|               |      | B.Com - Finance & IT - Computer            |        |
| Amrita School |      | Applications)                              |        |
| of Arts and   |      | B.Sc. Visual Media                         | Kochi, |
| Sciences,     | 2003 | BBA - Logistics Management                 | Kerala |
| Kochi, Kerala |      | BBA - Bachelor of Business Administration  |        |
|               |      | B.F.A - Photography                        |        |
|               |      | MCA  |        |

|  | MFA - (ACM) Animation and Content       | l |
|--|---|---|
|  | Management                              | l |
|  | MFA - (AAA) Applied Art and Advertising | l |
|  | MFA - (DFM) Digital Film Making         |   |
|  | M.Com (Finance and Systems)             | l |
|  | MJMC - Master of Journalism and Mass    | l |
|  | Communication                           | l |
|  | M.Sc Mathematics                        | l |
|  | M.A (VM&C) - Visual Media &             | l |
|  | Communication                           | l |
|  | M.A (CC & A) - Corporate Communication  |   |
|  | & Advertising                           | l |
|  | M.A - English Language and Literature   | l |
|  | M.A Journalism and Mass Communication   | l |
|  | M.A English and Languages (Integrated 5 | l |
|  | Yr.)                                    | l |
|  | MCA Integrated 5 Yr. Course             | l |
|  | M.Sc.Maths Integrated 5 Yr. Course      | l |
|  | M.Phil (Commerce & Management)          | l |
|  | M.Phil (English Language & Literature)  | l |
|  | M.Phil (Computer Science & IT)          | l |
|  | M.Phil (Computer Science & IT) (Part    | l |
|  | Time)                                   | l |
|  | M.Phil (Mathematics)                    | l |
|  | M.Phil (Visual Media & Communication)   | l |
|  | M.Phil (Visual Media & Communication) - |   |
|  | Part Time                               |   |
|  | Ph.D                                    | l |
|  |   |   |

|               |      | M.Tech - Moleculer Medicine               |                      |
|---------------|------|---|----------------------|
| Amrita Centre |      | M.Tech - Nanomedical Sciences             |                      |
|               |      | M.Tech - Nanotechnology & Renewable       | Kochi,               |
| for           | 2007 | Energy                                    |                      |
| Nanosciences, | 2007 | M.Sc - Moleculer Medicine                 | Kerala               |
| Kochi, Kerala |      | M.Sc - Nanomedical Sciences               |                      |
|               |      | M.Sc Nanoscience and Nanotechnology       | •                    |
|               |      | Ph.D                                      |                      |
| Mysore        |      |   |                      |
| Campus        |      |   |                      |
|               |      | BBM - Bachelor of Business Management     |                      |
|               |      | BCA - Bachelor of Computer Applications   | Mysore,<br>Karnataka |
|               | 2003 | B.Com Regular - Bachelor of Commerce      |                      |
|               |      | B.Com Taxation - Bachelor of Commerce     |                      |
|               |      | B.Sc. Visual Media                        |                      |
|               |      | BBA - Bachelor of Business Administration |                      |
| Amrita School |      | B.Sc PCM                                  |                      |
| of Arts and   |      | MCA                                       |                      |
| Sciences,     |      | M.Com - Master of Commerce                |                      |
| Karnataka     |      | M.Sc Visual Communication                 |                      |
|               |      | B.Ed - Bachelor of Education              |                      |
|               |      | M.Sc Visual Communication - DFM           |                      |
|               |      | MCA - Integrated 5 Year                   | -                    |
|               |      | M Sc Visual Communication - Integrated 5  |                      |
|               |      | Year                                      |                      |
|               |      | B.Sc., B.Ed - PCM (Integrated)            |                      |
|               |      | Ph.D                                      |                      |
|               |      |   |                      |

Note: Add rows as needed.

7. Details of all the programs being offered by the institution under consideration:

|          |        |           |          |            |        |         | -   |             |          | _      |                     |      |
|----------|--------|-----------|----------|------------|--------|---------|-----|-------------|----------|--------|---------------------|------|
| Tahla /  | \ 7 Da | staile of | f all th | nrogrome   | hoing  | offorod | hv  | tha institu | ition un | ndor o | oncidarati          | inn  |
| I ADIC F | 1./ DC | tans u    | ан ш     | t programs | DCIIIZ | ULLELEU | UV. | ւու ուջուս  | uuuu uu  | iuci i | <b>UIISIUCI</b> ali | iun. |
|          |        |           |          | 1 0        |        |         |     |             |          |        |                     |      |

| S.<br>No | Program<br>Name                    | Name of the<br>Department | Year<br>of<br>Start | Intake | Increase/<br>Decrease<br>in intake, | Year of<br>Increase/<br>Decrease | AICTE<br>Approval  | Accredita<br>tion<br>Status |
|----------|------------------------------------|---------------------------|---------------------|--------|-------------------------------------|----------------------------------|--|-----------------------------|
| 1        | B.Tech<br>Aerospace<br>Engineering | Aerospace<br>Engineering  | 2007                | 60     | Nil                                 | Nil                              | F.No.<br>Southern/1-<br>707695364/201<br>2/EOA Dated<br>10.05.2012<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018     | Eligible but<br>not applied |
| 2        | B.Tech<br>Civil<br>Engineering     | Civil<br>Engineering      | 2008                | 60     | Nil                                 | Nil                              | F.No.<br>Southern/1-<br>414170221/201<br>1/<br>EOA Dated<br>01.09.2011<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018 | Eligible but<br>not applied |

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| 3 | M.Tech<br>Structural<br>And<br>Construction<br>Engineering | Civil<br>Engineering    | 2014 | 25 | Nil | Nil |   | Eligible but<br>not applied |
|---|--|-------------------------|------|----|-----|-----|---|-----------------------------|
| 4 | B.Tech<br>Chemical<br>Engineering                          | Chemical<br>Engineering | 2007 | 60 | Nil | Nil | F.No.<br>Southern/1-<br>707695364/201<br>2/ EOA Dated<br>10.05.2012<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018 | Eligible but<br>not applied |

| 5 | M.Tech<br>Materials<br>Science &<br>Engineering      | Chemical<br>Engineering                    | 2015 | 18 | Nil                             | Nil                     |   | Eligible but<br>not applied |
|---|--|--|------|----|---------------------------------|-------------------------|---|-----------------------------|
| 6 | B.Tech<br>Electrical &<br>Electronics<br>Engineering | Electrical &<br>Electronics<br>Engineering | 1994 | 40 | Increase<br>Intake - 20 +<br>60 | <u>1996**,</u><br>2014. | No. F 732-50-<br>9/RC/94 Dated<br>12.08.1994,<br>** Approval<br>letter for<br>Increase intake<br>not available<br>F.No.<br>Southern/1-<br>2016442706/20<br>14/EOA Dated<br>04.06.2014<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018 | Eligible but<br>not applied |

| 7 | M.Tech -<br>Power<br>Electronics                            | Electrical &<br>Electronics<br>Engineering | 2003 | 18 | Increase<br>Intake - 7 + 5 | 2005,<br>2018. | F.No.PG/TN/M<br>.TECH./2004/E<br>CE-0078-0057<br>Dated<br>25.06.2004,<br>F.No.730-52-<br>203(E)/ET/97<br>Dated<br>19.09.2005,<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018 | Eligible but<br>not applied |
|---|---|--|------|----|----------------------------|----------------|---|-----------------------------|
| 8 | M.Tech -<br>Embedded<br>Systems                             | Electrical &<br>Electronics<br>Engineering | 2008 | 24 | Increase<br>Intake - 6     | 2018           | F.No.<br>Southern/1-<br>707695364/201<br>2/EOA Dated<br>10.05.2012<br>F.No.<br>Southern/1-<br>3516200899/20<br>18/EOA Dated<br>04-Apr-2018  | Eligible but<br>not applied |
| 9 | M.Tech -<br>Control &<br>Instrumentatio<br>n<br>Engineering | Electrical &<br>Electronics<br>Engineering | 2016 | 18 | _                          | _              | _   | Eligible but<br>not applied |

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| 10 | M.Tech -<br>Renewable<br>Energy<br>Technologies | Electrical &<br>Electronics<br>Engineering | 2014 | 18 | _ | _ | - | Eligible but<br>not applied |
|----|---|--|------|----|---|---|---|-----------------------------|
|----|---|--|------|----|---|---|---|-----------------------------|

#### \* Write applicable one:

Applying first time

Granted provisional accreditation for two/three years for the period(spec

#### ify period)

- □ Granted accreditation for 5/6 years for the period (specify period)
- □ Not accredited (specify visit dates, year)
- □ Withdrawn (specify visit dates, year)
- $\Box$  Not eligible for accreditation
- □ Eligible but not applied

Note: Add rows as needed.

## 8. Programs to be considered for Accreditation vide this application

| S. No. | Program Name                                |
|--------|---|
| 1      | B.Tech Aerospace Engineering                |
| 2      | B.Tech Civil Engineering                    |
| 3      | B.Tech Chemical Engineering                 |
| 4      | B.Tech Electrical & Electronics Engineering |

Table A.8 Programs to be considered for Accreditation

#### 9. Total number of employees:

| Items                     |   | CA   | Y       | CAY | CAYm1   |     | CAYm2   |  |
|---------------------------|---|------|---------|-----|---------|-----|---------|--|
|                           |   | 2018 | 2018-19 |     | 2017-18 |     | 2016-17 |  |
|                           |   | Min  | Max     | Min | Max     | Min | Max     |  |
| Faculty in Engineering    | М | 165  |         | 172 |         | 182 |         |  |
|                           | F | 94   |         | 101 |         | 115 |         |  |
| Faculty in Maths, Science | Μ | 57   |         | 57  |         | 37  |         |  |
| &                         | F | 40   |         | 39  |         | 30  |         |  |
| Humanities teaching in    |   |      |         |     |         |     |         |  |
| engineering Programs      |   |      |         |     |         |     |         |  |
|                           |   |      |         |     |         |     |         |  |
| Non-teaching staff        | Μ | 290  |         | 289 |         | 274 |         |  |
|                           | F | 73   |         | 75  |         | 80  |         |  |

## A. Regular Employees (Faculty and Staff):

 Table A.9(a) Regular Employees (Faculty and Staff)

*Note:* Minimum 75% should be Regular/Full Time faculty and the remaini ng shall be Contractual Faculty as

per AICTE norms and standards.

The contractual faculty (doing away with the terminology of visiting /adjunct faculty, whatsoever)

who have taught for 2 consecutive semesters in the corresponding ac ademic year on full time basis

shall be considered for the purpose of calculation in the Student Fac ulty Ratio.

CAY – Current Academic Year CAYm1- Current Academic Year minus1= Current Assessment Year CAYm2 - Current Academic Year minus2=Current Assessment Year minu s 1

# B. Contractual Staff Employees (Faculty and Staff): (Not covered in Table A):

| Items                     |   | CAY<br>2018-19 |     | CAYm1<br>2017-18 |     | CAYm2<br>2016-17 |     |
|---------------------------|---|----------------|-----|------------------|-----|------------------|-----|
|                           |   | Min            | Max | Min              | Max | Min              | Max |
| Faculty in Engineering    | М | 7              |     | 8                |     | 7                |     |
|                           | F | 1              |     | 0                |     | 1                |     |
| Faculty in Maths, Science | М | 2              |     | 4                |     | 2                |     |
| &Humanities teaching in   | F | 1              |     | 6                |     | 0                |     |
| Non-teaching staff        | М | 16             |     | 12               |     | 5                |     |
|                           | F | 2              |     | 3                |     | 2                |     |

**10. Total number of Engineering Students:** 

| Item              | Item         CAY           2018-19 |        |       |      | CAYm1<br>2017-18 |       | CAYm2<br>2016-17 |        |       |  |
|-------------------|------------------------------------|--------|-------|------|------------------|-------|------------------|--------|-------|--|
|                   | Male                               | Female | Total | Male | Female           | Total | Male             | Female | Total |  |
| B.Tech – I Year   | 850                                | 224    | 1074  | 988  | 256              | 1244  | 877              | 257    | 1134  |  |
| B.Tech – II Year  | 982                                | 254    | 1236  | 863  | 251              | 1114  | 798              | 219    | 1017  |  |
| B.Tech – III Year | 855                                | 249    | 1104  | 793  | 218              | 1011  | 758              | 233    | 991   |  |
| B.Tech-IV Year    | 776                                | 218    | 994   | 753  | 233              | 986   | 834              | 314    | 1148  |  |
| Total             | 3463                               | 945    | 4408  | 3397 | 958              | 4355  | 3267             | 1023   | 4290  |  |
|                   |                                    |        |       |      |                  |       |                  |        |       |  |
| M.Tech – I Year   | 141                                | 84     | 225   | 267  | 127              | 394   | 214              | 156    | 370   |  |
| M.Tech – II Year  | 256                                | 124    | 380   | 203  | 149              | 352   | 218              | 165    | 383   |  |
| M.Tech – III      | 0                                  | 0      | 0     | 23   | 0                | 23    | 2                | 0      | 2     |  |
| Year              | Ŭ                                  |        | Ŭ     |      | 0                |       |                  |        | _     |  |
| Total             | 397                                | 208    | 605   | 493  | 276              | 769   | 434              | 321    | 755   |  |

Table A.10 Total number of Engineering Students

#### **11. Vision of the Institution:**

To be a global leader in the delivery of engineering education, transforming individuals to become creative, innovative, and socially responsible contributors in their professions.

#### **12. Mission of the Institution:**

- To provide best-in-class infrastructure and resources to achieve excellence in technical education,
- To promote knowledge development in thematic research areas that have a positive impact on society, both nationally and globally,
- To design and maintain the highest quality education through active engagement with all stakeholders students, faculty, industry, alumni and reputed academic institutions,
- To contribute to the quality enhancement of the local and global education ecosystem,
- To promote a culture of collaboration that allows creativity, innovation, and entrepreneurship to flourish, and
- To practice and promote high standards of professional ethics, transparency, and accountability

13. Contact Information of the Head of the Institution and NBA coordinator, if designated:

|            | Name              | :    | Dr. SASANGAN RAMANATHAN |
|------------|-------------------|------|-------------------------|
|            | Designation       | :    | DEAN                    |
|            | Mobile No         |      | : 7598155285            |
|            | Email id          | :    | sasangan@amrita.edu     |
| NBA coordi | nator, if designa | ated |                         |
|            | Name              | :    | Dr S Mahadevan          |
|            | Designation       | :    | Deputy Dean             |
|            | Mobile No         | :    | 9944312309              |
|            | Email id          | :    | dydean@cb.amrita.edu    |
|            |                   |      |                         |

ii.

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# PART B: Criteria Summary

# Name of the program - B.Tech – Civil Engineering

| Criteria<br>No.          | Criteria   | Mark/Weightage |  |  |  |
|--------------------------|--|----------------|--|--|--|
| Program Level Criteria   |  |                |  |  |  |
| 1.                       | Vision, Mission and Program Educational Objectives           | 50             |  |  |  |
| 2.                       | Program Curriculum and Teaching –Learning Processes          | 100            |  |  |  |
| 3.                       | Course Outcomes and Program Outcomes                         | 175            |  |  |  |
| 4.                       | Students' Performance  | 100            |  |  |  |
| 5.                       | Faculty Information and Contributions                        | 200            |  |  |  |
| 6.                       | Facilities and Technical Support                             | 80             |  |  |  |
| 7.                       | Continuous Improvement                                       | 75             |  |  |  |
| Institute Level Criteria |  |                |  |  |  |
| 8.                       | First Year Academics   | 50             |  |  |  |
| 9.                       | Student Support Systems                                      | 50             |  |  |  |
| 10                       | Governance, Institutional Support and Financial<br>Resources | 120            |  |  |  |
|                          | TOTAL  | 1000           |  |  |  |

### PART B: Program Level Criteria

| CRITERION 1 | Vision, Mission and Program Educational Objectives | 50 |
|-------------|--|----|
|             |  |    |

#### 1.1. State the Vision and Mission of the Department and Institute

#### Vision and Mission of the Institute:

#### **Institute Vision**

To be a global leader in the delivery of engineering education, transforming individuals to become creative, innovative, and socially responsible contributors in their professions.

#### Mission

- To provide best-in-class infrastructure and resources to achieve excellence in technical education,
- To promote knowledge development in thematic research areas that have a positive impact on society, both nationally and globally,
- To design and maintain the highest quality education through active engagement with all stakeholders students, faculty, industry, alumni and reputed academic institutions,
- To contribute to the quality enhancement of the local and global education ecosystem,
- To promote a culture of collaboration that allows creativity, innovation, and entrepreneurship to flourish, and
- To practice and promote high standards of professional ethics, transparency, and accountability

#### Vision and Mission of the Department:

### Vision

To excel in imparting quality education in Civil Engineering and moulding professionals to address the technological challenges and societal needs.

#### Mission

- Mission 1: Foster professionally competent civil engineers through dedicated team effort, international academic collaborations and industrial exposure.
- Mission 2: Achieve excellence in research through advanced laboratory facilities, collaborative projects with academia and industries
- Mission 3: Provide life skills training; inculcate societal commitment through value based education and outreach programmes.

#### **1.2. State the Program Educational Objectives (PEOs)**

#### **Programme Educational Objectives (PEOs)**

The Civil Engineering Program graduates will

- PEO1: Achieve excellence in Civil Engineering skills to engage in diverse career choices
- PEO2: Develop attitude of lifelong learning through research, multidisciplinary studies and professional organisations
- PEO3: Demonstrate the ability to function in a team environment along with leadership, communication and management skills.
- PEO4: Exhibit sensitivity in serving the society as ethical and responsible professionals

## **1.3. Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders**

The details of the various stakeholders of the departments are shown in Fig. B.1.3.



Fig. B. 1.3 Stakeholders of the Department

In order to ensure that the vision and mission of the department reaches all the stake holders, it is published on common platforms, viz.

- 1. Website (www.amrita.edu/school/engineering/coimbatore/civil)
- 2. Department
- 3. Chairperson chamber
- 4. Faculty rooms
- 5. Class rooms
- 6. Laboratories
- 7. Laboratory manual /record
- 8. Department conference hall
- 9. Department Library

- 10. Department notice board
- 11. Department Newsletter
- 12. Workshop/conference brochure
- 13. Curriculum Book

During the First year student orientation, students and parents were informed about the Vision, Mission, PEO, and PSO of the Department and requested their suggestions. As a part of student mentoring in their academics, progress reports are sent to the parents which includes the Vision and Mission of the Department. The awareness to industry experts and employers are done through department and placement cell (Corporate & Industry Relations). Feedback from Alumni and BoS experts are collected via e-mail /during their visit.

# **1.4.** State the process for defining the Vision and Mission of the Department, and PEOs of the program

#### Vision and Mission of the Department

The vision and mission statements of the department are established through a thorough consultation process by involving the stakeholders (Faculty members, students, alumni, recruiters, parents and professional bodies) of the department.

- Vision and Mission of the Institute are taken as the basis.
- Views are taken from stakeholders of the department such as industry, management, students, alumni, faculty, University etc on matters related to academics / teaching & learning, research, collaborative projects with industry & academics, society & environment etc.
- The various suggestions are analysed and the Vision and Mission of the department are formulated by the Department Advisory Committee (DAC) and submitted to Dean-Engineering for approval.
- On approval from Dean-Engineering, the Vision and Mission of the department are published.

• The Vision and Mission are periodically reviewed by stakeholders for future modifications. The entire process involved in the formulation of Vision and Mission of the department is shown in Fig B.1.4 (a).



Fig. B. 1.4 (a) Process of defining Vision & Mission

## **PEOs of the Programme**

- The vision and mission of the Department, Programme Outcome (PO) defined by the NBA and Programme Specific Outcome (PSO) formulated by the Department are taken as the basis to formulate the PEO.
- The Programme Coordinator consults with various stakeholders, collects their views for documentation. The expectations and requirements of the stakeholders are important factors contributing to the formulation of the PEOs.
- The PEOs are then formulated by the DAC and subsequently forwarded to Dean-Engineering for approval.

- In case of necessity for modification, the process of defining the PEOs is repeated and then approved by Dean-Engineering.
- The approved PEOs are finally published by the DAC. The PEOs are reviewed regularly by the stakeholders. The entire process involved in defining the PEOs is depicted in Fig. B. 1.4 (b).



Fig. B. 1.4 (b) Process for Defining Programme Educational Objectives

#### 1.5. Establish consistency of PEOs with Mission of the Department

#### A. Mission of the Department

To achieve the vision, the department will:

- Mission 1: Foster professionally competent civil engineers through dedicated team effort, international academic collaborations and industrial exposure.
- Mission 2: Achieve excellence in research through advanced laboratory facilities, collaborative projects with academia and industries
- Mission 3: Provide life skills training; inculcate societal commitment through value based education and outreach programmes.

Table B.1.5 gives the details of the correlation of PEOs with various mission statements of the department.

| DEO   |  | Mission | Mission     | Mission   |
|-------|--|---------|-------------|-----------|
| PEO   | PEO Statements   | 1       | 2           | 3         |
| PEO1  | Achieve excellence in Civil engineering skills to engage in diverse career choices   | 3       | 2           | 2         |
| PEO2  | Develop attitude of lifelong learning<br>through research, multidisciplinary<br>studies and professional organizations         | 2       | 3           | 1         |
| PEO3  | Demonstrate the ability to function in a<br>team environment along with<br>leadership, communication and<br>management skills. | 1       | 1           | 3         |
| PEO4  | Exhibit sensitivity in serving the society as ethical and responsible professionals  | 2       | 1           | 3         |
| 3 - S | trong Correlation 2 -Moderate Corre  | lation  | l - Weak Co | rrelation |

#### Table B.1.5 Correlations of PEOs with Mission of the Department

#### B. Consistency/justification of co-relation parameters of the above matrix

- **PEO1** is strongly mapped with the mission statement 1 and moderately with 2& 3 because they assist in acquiring the engineering skills that are necessary at various career stages.
- **PEO2** is strongly mapped to mission 2 and moderately mapped with mission 1 as they focus on inculcating an inquisitive approach to deal with research, industrial and socially relevant tasks.
- **PEO3** is strongly mapped with the mission statement 3 because of its emphasis on the attainment of necessary skills in working with different kinds of people, to value different perspectives, and to contribute to consensus building and decision making.
- **PEO4** is strongly and moderately mapped to missions 3 and 1 as the common goal of engineering for a sustainable future requires professionals to deal not just with technical issues and efficient design, but also with the larger social, economic, and environmental aspects.

|                    |  | 100 |
|--------------------|--|-----|
| <b>CRITERION 2</b> | Program Curriculum and Teaching–Learning Processes |     |

#### 2.1. Program Curriculum

#### 2.1.1. State the process for designing the program curriculum

In general, Curriculum maintains a balanced composition of Basic Sciences, Engineering Sciences, Humanities and Social Sciences, Program Core, Program Electives, Projects Work and Employability Enhancement skills as suggested by AICTE. The feedback from the alumni members, faculty, students, recruiters and industry experts are taken.

Relevant details of academic policies and curriculum of other reputed National & International universities / Institutes through their websites, and also the programme specific criteria given by American Society of Civil Engineers (ASCE) are compiled. Analysis is done on the attainment of POs/PSOs of existing curriculum. Gaps in the existing curriculum are identified and modifications are made in pre-BoS meetings at department level. The curriculum is designed to comply with all the POs/PSOs to satisfactory level with the following seven civil engineering technical areas:

- Structural
- Geotechnical
- Environmental/Sanitary
- Transportation
- Hydraulics/Hydrology/Water resources
- Surveying/Measurements
- Construction

Then, the curriculum and syllabus are presented to the expert members of the Board of studies for perusal and approval. The final approval of curriculum and syllabus is done by Institute academic council committee, as and when required. The sequence of the entire procedure involved is shown in Fig. B. 2.1.1.



Fig.B.2.1.1 Curriculum Design/Revision
#### 2.1.2. Structure of the Curriculum

Tables B. 2.1.2 (a) and B. 2.1.2 (b) give the details of 2010 curriculum and 2015 curriculum respectively.

|                     |  | Tot             | al number of     | contact hours     | S*              |         |
|---------------------|--|-----------------|------------------|-------------------|-----------------|---------|
| Course Code         | Course Title   | Lecture*<br>(L) | Tutorial*<br>(T) | Practical*<br>(P) | Total<br>Hours* | Credits |
|                     | Semester 1   | [               |                  |                   |                 |         |
| ENG111              | Communicative English  | 2               | 0                | 2                 | 4               | 3       |
| PHY 100/<br>CHY 100 | Physics/Chemistry  | 3               | 0                | 0                 | 3               | 3       |
| MAT111              | Calculus, Matrix Algebra and Ordinary Differential Equations | 3               | 1                | 0                 | 4               | 4       |
| EEE 100             | Electrical Engineering                                       | 3               | 0                | 0                 | 3               | 3       |
| MEC 100/<br>CSE100  | Engineering Mechanics/<br>Computer Programming               | 3/<br>3         | 1/<br>0          | 0/<br>0           | 0               | 4/<br>3 |
| MEC 181             | Engineering Drawing  | 1               | 0                | 3                 | 4               | 2       |
| PHY 180/<br>CHY 180 | Physics Lab./Chemistry Lab.                                  | 0               | 0                | 3                 | 3               | 1       |
| MEC 180/<br>EEE 180 | Workshop A/Workshop B  | 1               | 0                | 2                 | 3               | 2       |
| CSE180              | Computer Programming Lab.                                    | 0               | 0                | 3                 | 3               | 1       |
| CUL 101             | Cultural Education-I   | 2               | 0                | 0                 | 2               | 2       |
|                     |  |                 |                  |                   | Total           | 24      |

| Table B.2.1.2 (a) | 2010 Curriculum | (2014 Regulation) |
|-------------------|-----------------|-------------------|
|-------------------|-----------------|-------------------|

|                     | Semester I   | I       |         |         |         |         |
|---------------------|--|---------|---------|---------|---------|---------|
| ENG112              | Technical Communication  | 2       | 0       | 2       | 4       | 3       |
| CH 100/<br>PH 100   | Chemistry/<br>Physics  | 3       | 0       | 0       | 3       | 3       |
| MAT112              | Vector Calculus, Fourier Series and Partial Differential Equations | 3       | 1       | 0       | 4       | 4       |
| ECE 100             | Electronics Engineering  | 3       | 0       | 0       | 3       | 3       |
| CSE100/<br>ME 100   | Computer Programming /<br>Engineering Mechanics                    | 3/<br>3 | 0/<br>1 | 0/<br>0 | 3/<br>4 | 3/<br>4 |
| MEC 182             | Computer Aided Drawing   | 1       | 0       | 3       | 4       | 2       |
| CHY 181/<br>PHY 181 | Chemistry Lab./<br>Physics Lab.                                    | 0       | 0       | 3       | 3       | 1       |
| EEE 180/<br>MEC180  | Workshop B/<br>Workshop A  | 1       | 0       | 2       | 3       | 2       |
| CSE180              | Computer Programming Lab.  | 0       | 0       | 3       | 3       | 1       |
| HU 102              | Cultural Education – II  | 1       | 0       | 0       | 1       | 1       |
|                     |  |         |         |         | Total   | 24      |
|                     | Semester II  | Ι       |         |         |         |         |
| MAT211              | Integral Transforms and Complex Analysis                           | 3       | 1       | 0       | 4       | 4       |
| CVL 200             | Engineering Geology  | 2       | 0       | 0       | 2       | 2       |
| CVL 201             | Surveying  | 3       | 1       | 0       | 4       | 4       |
| CVL 210             | Solid Mechanics  | 3       | 1       | 0       | 4       | 4       |
| CVL 211             | Construction Materials   | 2       | 0       | 0       | 2       | 2       |
| CVL 220             | Principles of Fluids Mechanics                                     | 2       | 1       | 0       | 3       | 3       |
|                     | Humanities Elective I  | 1       | 0       | 2       | 3       | 2       |

| CVL 291 | Material Testing & Evaluation Lab             | 0 | 0 | 3 | 3     | 1  |
|---------|---|---|---|---|-------|----|
| CVL 293 | Survey Practical                              | 1 | 0 | 3 | 4     | 2  |
|         |   |   |   |   | Total | 24 |
|         | Semester IV                                   | V | · | · |       |    |
| MAT212  | Mathematical Statistics and Numerical Methods | 3 | 1 | 0 | 4     | 4  |
| CVL 212 | Structural Analysis                           | 3 | 1 | 0 | 4     | 4  |
| CVL 213 | Building Technology                           | 3 | 0 | 0 | 3     | 3  |
| CVL 221 | Hydraulic Engineering                         | 3 | 1 | 0 | 4     | 4  |
| CVL 230 | Soil Mechanics                                | 3 | 1 | 0 | 4     | 4  |
|         | Humanities Elective II                        | 1 | 0 | 2 | 3     | 2  |
| CVL 290 | Construction Materials Lab                    | 0 | 0 | 3 | 3     | 1  |
| CVL 292 | Fluid Mechanics & Machinery Lab.              | 0 | 0 | 3 | 3     | 1  |
| SSK111  | SOFT SKILLS I                                 | 0 | 0 | 3 | 3     | 1  |
|         |   |   |   |   | Total | 24 |
|         | Semester V                                    | / |   |   |       |    |
| CVL 314 | Advanced Structural Analysis                  | 3 | 1 | 0 | 4     | 4  |
| CVL 315 | Design of Concrete Structures                 | 3 | 1 | 0 | 4     | 4  |
| CVL 331 | Foundation Engineering                        | 3 | 1 | 0 | 4     | 4  |
| CVL 332 | Transportation Engineering I                  | 3 | 1 | 0 | 4     | 4  |
| ENV200  | Environmental Studies                         | 3 | 1 | 0 | 0     | 4  |
| CVL 391 | Geotechnical Engineering Lab.                 | 0 | 0 | 3 | 3     | 1  |
| CVL 393 | Building Drawing                              | 1 | 0 | 3 | 4     | 2  |
| SSK112  | Soft Skills II                                | 0 | 0 | 3 | 2     | 1  |

|         |  |    |   |   | Total | 24 |  |
|---------|--|----|---|---|-------|----|--|
|         | Semester VI                                    |    |   |   |       |    |  |
| CVL 322 | Environmental Engineering                      | 3  | 1 | 0 | 4     | 4  |  |
| CVL 316 | Design of Steel Structures                     | 3  | 1 | 0 | 4     | 4  |  |
| CVL 323 | Water Resources and Irrigation Engineering     | 3  | 1 | 0 | 4     | 4  |  |
| CVL 333 | Transportation Engineering II                  | 3  | 1 | 0 | 4     | 4  |  |
|         | Science Elective I                             | 3  | 0 | 0 | 3     | 3  |  |
| CVL 390 | Design & Drawing (RCC & Steel Structures)      | 1  | 0 | 3 | 4     | 2  |  |
| CVL 392 | Environmental Engineering Lab.                 | 0  | 0 | 3 | 3     | 1  |  |
| SSK113  | Soft Skills III                                | 0  | 0 | 3 | 3     | 1  |  |
|         |  |    |   |   | Total | 23 |  |
|         | Semester V                                     | ΊΙ |   |   | ·     |    |  |
|         | Elective I                                     | 3  | 0 | 0 | 3     | 3  |  |
|         | Elective II                                    | 3  | 0 | 0 | 3     | 3  |  |
|         | Elective III                                   | 3  | 0 | 0 | 3     | 3  |  |
|         | Science Elective II                            | 3  | 0 | 0 | 3     | 3  |  |
| MNG400  | Principles of Management                       | 3  | 0 | 0 | 3     | 3  |  |
| CVL 491 | Design & Drawing (Water Resources Engineering) | 1  | 0 | 3 | 4     | 2  |  |
| CVL 493 | Quantity Surveying & Valuation                 | 1  | 0 | 2 | 3     | 2  |  |
| CVL 497 | Seminar  | 0  | 0 | 3 | 3     | 1  |  |
|         |  |    |   |   | Total | 20 |  |
|         |  |    |   |   |       |    |  |

|           | Semester VIII       |   |   |   |   |    |  |
|-----------|---------------------|---|---|---|---|----|--|
|           | Elective IV         | 3 | 0 | 0 | 3 | 3  |  |
|           | Management Elective | 3 | 0 | 0 | 3 | 3  |  |
| CVL 499   | Project             |   |   |   |   | 10 |  |
|           | Total 16            |   |   |   |   |    |  |
| *Per week |                     |   |   |   |   |    |  |

**Table B.2.1.2 (b)** 2015 Curriculum

|                       | Total number of contact hours*                         |                 |                  |                   |                 |         |
|-----------------------|--|-----------------|------------------|-------------------|-----------------|---------|
| Course Code           | Course Title   | Lecture*<br>(L) | Tutorial*<br>(T) | Practical*<br>(P) | Total<br>Hours* | Credits |
|                       | Semeste  | er I            |                  | •                 |                 |         |
| 15ENG111              | Communicative English                                  | 2               | 0                | 2                 | 4               | 3       |
| 15MAT111              | Calculus and Matric Algebra                            | 2               | 1                | 0                 | 3               | 3       |
| 15CSE100              | Computational Thinking and problem Solving             | 3               | 0                | 2                 | 5               | 4       |
| 15PHY100/<br>15CHY100 | Physics/<br>Chemistry                                  | 3               | 0                | 0                 | 3               | 3       |
| 15PHY181/<br>15CHY181 | Physics lab/<br>Chemistry lab                          | 0               | 0                | 2                 | 2               | 1       |
| 15MEC180/<br>15EEE180 | Workshop A/<br>Workshop B                              | 0               | 0                | 2                 | 2               | 1       |
| 15MEC100              | Engineering drawing – CAD                              | 2               | 0                | 2                 | 4               | 3       |
| 15CUL101              | Cultural Education I                                   | 2               | 0                | 0                 | 2               | 2       |
|                       |  |                 |                  |                   | Total           | 20      |
|                       | Semester   | r II            |                  |                   |                 |         |
| 15MAT121              | Vector Calculus and Ordinary Differential<br>Equations | 3               | 1                | 0                 | 4               | 4       |
| 15CHY100/<br>15PHY100 | Chemistry /<br>Physics                                 | 3               | 0                | 0                 | 3               | 3       |
| 15CVL102              | Mechanics: Statics and Dynamics                        | 2               | 1                | 0                 | 3               | 3       |

| 15CVL111  | Introduction to Civil Engineering             | 1 | 0 | 0 | 1     | 1  |  |
|-----------|---|---|---|---|-------|----|--|
| 15CSE102  | Computer Programming                          | 3 | 0 | 0 | 3     | 3  |  |
| 15CSE180  | Computer Programming Lab                      | 0 | 0 | 2 | 2     | 3  |  |
| 15CVL112  | Engineering Graphics – CAD                    | 1 | 0 | 2 | 3     | 2  |  |
| 15CHY181/ | Chemistry Lab /                               | 0 | 0 | 2 | 2     | 1  |  |
| 15PHY181  | Physics Lab                                   | Ū | Ŭ | 1 | 2     | 1  |  |
| 15EEE180/ | Workshop B/                                   | 0 | 0 | 2 | 2     |    |  |
| 15MEC180  | Workshop A                                    | 0 | 0 | 2 | 2     | 1  |  |
| 15CUL111  | Cultural Education II                         | 2 | 0 | 0 | 2     | 2  |  |
|           |   |   |   |   | Total | 21 |  |
|           | Semester III                                  |   |   |   |       |    |  |
| 15CVL201  | Construction Materials                        | 3 | 0 | 0 | 3     | 3  |  |
| 15CVL202  | Principles of Fluid Mechanics                 | 2 | 1 | 0 | 3     | 3  |  |
| 15CVL203  | Solid Mechanics                               | 3 | 1 | 0 | 4     | 4  |  |
| 15CVL204  | Surveying                                     | 3 | 1 | 0 | 4     | 4  |  |
| 15MAT204  | Transforms and Partial Differential Equations | 2 | 1 | 0 | 3     | 3  |  |
|           | Humanities elective I                         | 2 | 0 | 0 | 2     | 2  |  |
| 15CVL281  | Material Testing Lab.                         | 0 | 0 | 2 | 2     | 1  |  |
| 15CVL282  | Survey Practice                               | 1 | 0 | 2 | 3     | 2  |  |
| 15AVP201  | Amrita Values Programme I                     | 1 | 0 | 0 | 1     | 1  |  |
|           |   |   |   |   | Total | 23 |  |
|           | Semester IV                                   |   |   |   |       |    |  |

|          |  | _   | _ | - | _     |    |
|----------|--|-----|---|---|-------|----|
| 15CVL211 | Building Technology                      | 3   | 0 | 0 | 3     | 3  |
| 15CVL212 | Geology and Soil Mechanics               | 2   | 1 | 0 | 3     | 3  |
| 15CVL213 | Hydraulic Engineering                    | 2   | 1 | 0 | 3     | 3  |
| 15CVL214 | Structural Analysis                      | 2   | 1 | 0 | 3     | 3  |
| 15MAT212 | Complex Analysis and Numerical Methods   | 2   | 1 | 0 | 3     | 3  |
|          | Humanities elective II                   | 2   | 0 | 0 | 2     | 2  |
| 15CVL285 | Construction Materials Lab.              | 0   | 0 | 2 | 2     | 1  |
| 15CVL286 | Hydraulic Engineering Lab.               | 0   | 0 | 2 | 2     | 1  |
| 15SSK221 | Soft Skills I                            | 1   | 0 | 2 | 3     | 2  |
| 15AVP211 | Amrita Values Programme II               | 1   | 0 | 0 | 1     | 1  |
|          |  |     |   |   | Total | 22 |
|          | Semester                                 | · V | · |   | ·     |    |
| 15CVL301 | Advanced Structural Analysis             | 2   | 1 | 0 | 3     | 3  |
| 15CVL302 | Design of Concrete Structures            | 3   | 1 | 0 | 4     | 4  |
| 15CVL303 | Geotechnical Engineering                 | 3   | 1 | 0 | 4     | 4  |
| 15ENV300 | Environmental Science and Sustainability | 3   | 0 | 0 | 3     | 3  |
| 15MAT214 | Probability and Statistics               | 2   | 1 | 0 | 3     | 3  |
| 15CVL381 | Building Drawing                         | 1   | 0 | 2 | 3     | 2  |
| 15CVL382 | Geotechnical Engineering Lab.            | 0   | 0 | 2 | 2     | 1  |
| 15SSK321 | Soft Skills II                           | 0   | 0 | 2 | 2     | 1  |

| 15CVL390 | Live in Lab***                             |     |   |   |       | [3]         |
|----------|--|-----|---|---|-------|-------------|
|          |  |     |   |   | Total | 22 +<br>[3] |
|          | Semester                                   | VI  |   |   |       |             |
| 15CVL311 | Design of Steel Structures                 | 3   | 1 | 0 | 4     | 4           |
| 15CVL312 | Environmental Engineering I                | 2   | 1 | 0 | 3     | 3           |
| 15CVL313 | Transportation Engineering I               | 2   | 1 | 0 | 3     | 3           |
| 15CVL314 | Water Resources and Irrigation Engineering | 3   | 1 | 0 | 4     | 4           |
| 15CVL385 | Environmental Engineering Lab.             | 0   | 0 | 2 | 2     | 1           |
| 15CVL386 | Estimation and Valuation Practice          | 1   | 0 | 2 | 3     | 2           |
|          | Science Elective                           | 2   | 1 | 0 | 3     | 3           |
| 15SSK331 | Soft Skills III                            | 1   | 0 | 2 | 3     | 2           |
|          |  |     |   |   | Total | 22          |
|          | Semester                                   | VII |   |   |       |             |
| 15CVL401 | Construction Management                    | 3   | 1 | 0 | 4     | 4           |
| 15CVL402 | Environmental Engineering II               | 2   | 1 | 0 | 3     | 3           |
| 15CVL403 | Transportation Engineering II              | 2   | 1 | 0 | 3     | 3           |
| 15CVL481 | Structural Design and Detailing            | 0   | 0 | 2 | 2     | 1           |
|          | Elective I                                 | 2   | 1 | 0 | 3     | 3           |
|          | Elective II                                | 2   | 1 | 0 | 3     | 3           |
| 15CVL490 | Professional Project                       | 0   | 1 | 2 | 3     | 2           |

|   |  |                  | 1                | 1               |                 |         |
|---|--|------------------|------------------|-----------------|-----------------|---------|
| 15CVL495  | Project Phase I  |                  |                  |                 | 4               | 2       |
| 15CVL390  | Live in Lab***   |                  |                  |                 |                 | [3]     |
|   |  |                  |                  |                 | Total           | 21 +    |
|   |  |                  |                  |                 | Total           | [3]     |
|   | Semeste  | r VIII           |                  |                 |                 |         |
|   | Elective III   | 2                | 1                | 0               | 3               | 3       |
|   | Elective IV/OpenElective**                             | 2                | 1                | 0               | 3               | 3       |
| 15CVL499  | Project Phase II                                       |                  |                  |                 | 20              | 10      |
|   |  |                  |                  |                 | Total           | 16      |
| *Per week   |  |                  |                  |                 |                 |         |
| ** A maximum o  | of one elective course can be chosen from the elective | es prescribed fo | or other branche | es or from unde | er science elec | ctives. |
| ***Students undertaking and registering for a Live - in - Lab project, can be exempted from registering for an elective course in the |  |                  |                  |                 |                 |         |
| higher semester.  |  |                  |                  |                 |                 |         |

### 2.1.3. State the components of the curriculum

Program curriculum grouping based on course components are given in Tables B. 2.1.3 (a) and B. 2.1.3 (b).

| Course Component                  | Curriculum<br>Content (% of total<br>number of credits for the<br>program ) | Total contact<br>hours | Total number<br>of Credits |
|-----------------------------------|---|------------------------|----------------------------|
| Basic Sciences                    | 14.37   | 420                    | 24                         |
| Engineering Sciences              | 13.17   | 480                    | 22                         |
| Humanities and Social<br>Sciences | 13.77   | 465                    | 23                         |
| Program Core                      | 46.11   | 1440                   | 77                         |
| Program Electives                 | 7.19  | 180                    | 12                         |
| Open Electives                    | 0.00  | 0                      | 0                          |
| Project(s)                        | 5.99  | 270                    | 10                         |
| Internships/Seminars              | 0.60  | 45                     | 1                          |
| Science Elective                  | 3.59  | 90                     | 6                          |
| Humanities elective               | 2.40  | 90                     | 4                          |
| Total number of credits           |   |                        | 179                        |

| Table B.2.1.3 (a) | 2010 Curriculum | (2014 Regulation) |
|-------------------|-----------------|-------------------|
|                   | 2010 Curriculum | (201 Trogulation) |

#### Table B.2.1.3 (b) 2015 Curriculum

| Course Component                  | Curriculum<br>Content (% of total<br>number of credits for<br>the program ) | Total contact<br>hours | Total number of<br>Credits |
|-----------------------------------|---|------------------------|----------------------------|
| Basic Sciences                    | 14.37   | 390                    | 24                         |
| Engineering Sciences              | 7.78  | 270                    | 13                         |
| Humanities and Social<br>Sciences | 10.78   | 330                    | 18                         |
| Program Core                      | 47.31   | 1335                   | 79                         |
| Program Electives                 | 5.39  | 135                    | 9                          |
| Open Electives                    | 1.80  | 45                     | 3                          |
| Project(s)                        | 8.38  | 420                    | 14                         |
| Internships/Seminars              | 0   | 0                      | 0                          |
| Science Elective                  | 1.80  | 45                     | 3                          |
| Humanities elective               | 2.40  | 60                     | 4                          |
| Live in Lab                       |   |                        | [6]                        |
| Total number of credits           |   |                        | 167                        |

# 2.1.4. State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure B.I

- The various courses in the curriculum are mapped to the PO's and PSO's, the details of which are given in Tables B. 2.1.4 (a) and B.2.1.4 (b).
- For each PO / PSO, the affinity levels of the individual mapped courses (obtained from the programme articulation matrix) and the credit allotted to the subjects are noted.
- The compliance towards each PO / PSO is calculated using the following formula,

Compliance (%) =  $\frac{\sum (\text{Corelation Level to PO × Credit of the course})}{\text{Maximum Corelation Level × Total programme credits}}$ 

where the terms of denominator, Maximum Correlation Level is 3 and Total Programme Credit is 179 (for 2010 Curriculum - 2014 Regulation) and 167 (for 2015 Curriculum) respectively.

The summary of all the subjects mapped to various POs and PSOs for 2010 curriculum (2014 Regulation) and 2015 curriculum are given in Tables B. 2.1.4 (a) and B 2.1.4 (c) respectively. The correlation level to different POs and PSOs for 2010 curriculum (2014 Regulation) and 2015 curriculum are given in Tables B 2.1.4(b) and B 2.1.4(d). Fig.s B. 2.1.4 (a) and B. 2.1.4 (b) respectively shows the compliance attained towards various POs and PSOs for 2010 curriculum (2014 Regulation) and 2015 curriculum (2014 Regulation) and 2015 curriculum.

 Table B.2.1.4 (a) Subjects mapped to different POs & PSOs-2010 curriculum (2014 Regulation)

| PO/PSO | Mapped Subjects  |
|--------|--|
| PO01   | MAT111; EEE100; MEC181 ; PHY100; PHY181; CSE100; CSE180; MEC180; CHY181; CHY100; ECE100; EEE180; MAT112; MEC100; MEC182; MAT211; CVL 200; CVL 201; CVL 210; CVL 211; CVL 220; CVL 291; CVL 293; CVL 212; CVL 213; CVL 221; CVL 230; CVL 290; CVL 292; MAT212; CVL 314; CVL 315; CVL 331; CVL 332; ENV200; CVL 391; CVL 393; CVL 322; CVL 316; CVL 323; CVL 333; CVL 390; CVL 392; PHY271; CVL453; CVL464; CVL455; CVL471; CVL474; CVL 491; CVL 493; CHY259; CVL 480; CVL 458; CVL 462; CVL 499 ; CSE 479 |
| PO02   | MAT111; EEE100; MEC181 ; PHY100; PHY181; CSE100; CSE180; MEC180; CHY181; CHY100; ECE100; EEE180; MAT112; MEC100; MEC182; MAT211; CVL 200; CVL 201; CVL 210; CVL 211; CVL 220; CVL 291; CVL 293; HUM258; CVL 212; CVL 213; CVL 221; CVL 230; CVL 292; MAT212; HUM259; CVL 314; CVL 315; CVL 331; CVL 332; ENV200; CVL 391; CVL 322; CVL 316; CVL 323; CVL 333; CVL 390; CVL 392; PHY271; CVL453; CVL464; CVL455; CVL471; CVL474; CVL 493; CVL 497; CHY259; CVL 480; CVL 458; CVL 462; CVL 499 ; CSE 479   |
| PO03   | MEC181 ; PHY181; CSE100; CSE180; MEC180; CHY181; CHY100; ECE100; EEE180; MAT112; MEC100; MEC182; MAT211; CVL 200; CVL 201; CVL 210; CVL 211; CVL 220; HUM258; CVL 212; CVL 213; CVL 221; MAT212; HUM259; CVL 315; CVL 331; CVL 332; ENV200; CVL 393; CVL 322; CVL 316; CVL 323; CVL 333; CVL 390; PHY271; CVL453; CVL464; CVL455; MNG400; CVL 480; CVL 462; CVL 499 ; CSE 479  |
| PO04   | MEC181 ; PHY181; CHY100; ENG112; MEC100; MEC182; CVL 212; CVL 290; CVL 292; CVL 331; ENV200; CVL 391; CVL 393; CVL 322; CVL 316; CVL 323; CVL 390; CVL 392; PHY271; CVL455; CVL471; CVL 491; CVL 493; CVL 497; CVL 462; CVL 499  |
| PO05   | PHY181; CSE180; MEC180; MEC182; CVL 201; CVL 210; CVL 314; CVL 315; CVL 393; CVL 322; CVL 316; CVL 390; CVL455; CVL471; CVL 493; CVL 497; CVL 480; CVL 499   |
| PO06   | CUL101; MEC181 ; PHY181; CUL102; MEC182; CVL 200; CVL 201; ENG251; HUM250; HUM256; HUM258; HUM252; HUM257; HUM259; CVL 314; CVL 331; CVL 332; ENV200; CVL 393; CVL 390; CVL471; CVL 493; CVL 497; CVL 499  |

| PO/PSO | Mapped Subjects  |
|--------|--|
| PO07   | CUL101; CUL102; CVL 201; HUM256; HUM258; HUM257; HUM259; ENV200; CVL 393; CVL 322; CVL455; CVL474; CVL         |
|        | 497; CVL 499   |
| PO08   | ENGITI; CULI01; CULI02; CVL 200; HUM250; HUM256; HUM258; HUM252; HUM257; HUM259; CVL 331; ENV200; CVL          |
|        | 493; CVL 497; CVL 480; CVL 499; CSE 479  |
| 2000   | ENGIII; CULI01; MEC180; CULI02; EEE180; ENGII2; CVL 201; CVL 291; CVL 293; ENG251; HUM250; HUM256;             |
| PO09   | HUM258; CVL 212; CVL 290; CVL 292; HUM252; HUM257; HUM259; CVL 315; ENV200; CVL 391; CVL 393; HIN101;          |
|        | MAL101; TAM101; CVL 322; CVL 316; CVL 333; CVL 390; CVL 392; CVL471; CVL 491; CVL 493; CVL 497; CVL 499        |
|        | ENG111; CUL101; MEC181 ; MEC180; CUL102; ENG112; MEC182; CVL 291; CVL 293; ENG251; HUM250; HUM256;             |
| PO10   | HUM258; CVL 212; CVL 290; CVL 292; HUM252; HUM257; HUM259; CVL 315; ENV200; CVL 391; CVL 393; HIN101;          |
|        | MAL101; TAM101; CVL 322; CVL 316; CVL 390; CVL 392; CVL455; CVL471; CVL 491; CVL 493; CVL 497; CVL 499         |
| PO11   | CUL101; CUL102; ENG251; HUM250; HUM256; HUM258; HUM252; HUM257; HUM259; CVL 393; CVL 322; CVL 390; CVL         |
| 1011   | 493; CVL 497; CVL 480; CVL 499   |
|        | ENG111; CUL101; MEC181; PHY100; MEC180; CUL102; ECE100; EEE180; MAT112; MEC100; MEC182; CVL 210; CVL 293;      |
| PO12   | ENG251; HUM250; HUM256; HUM258; CVL 212; CVL 290; CVL 292; HUM252; HUM257; HUM259; CVL 314; CVL 315; CVL       |
|        | 332; ENV200; CVL 391; CVL 393; CVL 392; PHY271; CVL471; CVL474; CVL 493; CVL 497; CVL 480; CVL 499             |
|        | CVL 200; CVL 201; CVL 210; CVL 211; CVL 220; CVL 291; CVL 293; HUM250; CVL 212; CVL 221; CVL 230; CVL 290; CVL |
| PSO1   | 292; HUM252; CVL 314; CVL 315; CVL 331; CVL 332; ENV200; CVL 391; CVL 393; CVL 316; CVL 323; CVL 333; CVL 390; |
|        | CVL 392; CVL464; CVL455; CVL471; CVL474; CVL 491; CVL 493; CVL 499 ; CSE 479                                   |
| DSO2   | CVL 290; CVL 292; ENV200; CVL 391; CVL 393; CVL 316; CVL 323; CVL 390; CVL 392; CVL453; CVL464; CVL455; CVL    |
| F302   | 493; CVL 462; CVL 499  |
|        | CVL 213; CVL 290; ENV200; CVL 391; CVL 393; CVL 390; CVL455; CVL 493; CVL 497; MNG400; CVL 480; CVL 458; CVL   |
| F303   | 499 ; CSE 479  |

| Subject | Credit | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | <b>PO7</b> | PO8 | PO9 | PO10 | PO11 | PO12 | PSO<br>1 | PSO<br>2 | PSO<br>3 |
|---------|--------|-----|-----|-----|-----|-----|-----|------------|-----|-----|------|------|------|----------|----------|----------|
| ENG111  | 3      | -   | -   | -   | -   | -   | -   | -          | 2   | 2   | 3    | -    | 2    | -        | -        | -        |
| MAT111  | 4      | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| EEE100  | 3      | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| CUL101  | 2      | -   | -   | -   | -   | -   | 2   | 3          | 3   | 2   | 3    | 2    | 2    | -        | -        | -        |
| MEC181  | 2      | 3   | 3   | 3   | 2   | -   | 2   | -          | -   | -   | 3    | -    | 3    | -        | -        | -        |
| PHY100  | 3      | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -    | -    | 1    | -        | -        | -        |
| PHY181  | 1      | 2   | 2   | 2   | 2   | 2   | 1   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| CSE100  | 3      | 1   | 2   | 2   | -   | -   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| CSE180  | 1      | 1   | 2   | 2   | -   | 1   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| MEC180  | 2      | 2   | 2   | 1   | -   | 1   | -   | -          | -   | 2   | 1    | -    | 1    | -        | -        | -        |
| CHY181  | 1      | 3   | 3   | 1   | -   | -   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| CHY100  | 3      | 3   | 3   | 2   | 1   | -   | -   | -          | -   | -   | -    | -    | -    | -        | -        | -        |
| CUL102  | 2      | -   | -   | -   | -   | -   | 2   | 3          | 3   | 2   | 3    | 2    | 2    | -        | -        | -        |
| ECE100  | 3      | 2   | 3   | 2   | -   | -   | -   | -          | -   | -   | -    | -    | 1    | -        | -        | -        |
| EEE180  | 2      | 3   | 2   | 2   | -   | -   | -   | -          | -   | 3   | -    | -    | 1    | -        | -        | -        |
| ENG112  | 3      | -   | -   | -   | 1   | -   | -   | -          | -   | 3   | 3    | -    | -    | -        | -        | -        |
| MAT112  | 4      | 3   | 2   | 1   | -   | -   | -   | -          | -   | -   | -    | -    | 1    | -        | -        | -        |
| MEC100  | 4      | 3   | 3   | 3   | 2   | -   | -   | -          | -   | -   | -    | -    | 1    | -        | -        | -        |

**Table B. 2.1.4 (b)** Correlation level to different POs and PSOs (2010 curriculum – 2014 Regulation)

| MEC182  | 2 | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | 3 | - | 3 | - | - | - |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| MAT211  | 4 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| CVL 200 | 2 | 2 | 2 | 1 | - | - | 1 | - | 1 | - | - | - | - | 2 | - | - |
| CVL 201 | 4 | 3 | 3 | 1 | - | 1 | 1 | 1 | - | 1 | - | - | - | 3 | - | - |
| CVL 210 | 4 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | 2 | 3 | - | - |
| CVL 211 | 2 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 220 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 291 | 1 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - | - |
| CVL 293 | 2 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | 2 | 3 | - | - |
| ENG251  | 2 | - | - | - | - | - | 2 | - | - | 2 | 3 | 1 | 2 | - | - | - |
| HUM250  | 2 | - | - | - | - | - | 3 | - | 3 | 3 | 2 | 2 | 2 | - | - | - |
| HUM256  | 2 | - | - | - | - | - | 3 | 3 | 2 | 3 | 2 | 1 | 2 | - | - | - |
| HUM258  | 2 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 3 | - | - | - |
| CVL 212 | 4 | 3 | 3 | 1 | 1 | - | - | - | - | 1 | 1 | - | 1 | 3 | - | - |
| CVL 213 | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CVL 221 | 4 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 230 | 4 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 290 | 1 | 1 | - | - | 3 | - | - | - | - | 3 | 3 | - | 1 | 1 | 1 | 1 |
| CVL 292 | 1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | - |
| MAT212  | 4 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| HUM252  | 2 | - | - | - | - | - | 3 | - | 3 | 3 | 2 | 2 | 2 | - | - | - |

| HUM257  | 2 | - | - | - | - | - | 2 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| HUM259  | 2 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 3 | - | - | - |
| SSK111  | 1 | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |
| CVL 314 | 4 | 2 | 3 | - | - | 3 | 3 | - | - | - | - | - | 1 | 3 | - | - |
| CVL 315 | 4 | 3 | 3 | 3 | - | 2 | - | - | - | 2 | 1 | - | 2 | 3 | - | - |
| CVL 331 | 4 | 3 | 3 | 2 | 1 | - | 1 | - | 1 | - | - | - | - | 3 | - | - |
| CVL 332 | 4 | 3 | 2 | 2 | - | - | 1 | - | - | - | - | - | 1 | 3 | - | - |
| ENV200  | 4 | 1 | 1 | 1 | 1 | - | 2 | 3 | 3 | 1 | 2 | - | 1 | 1 | 1 | 1 |
| CVL 391 | 1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | 1 |
| CVL 393 | 2 | 1 | - | 2 | 2 | 3 | 3 | 1 | - | 2 | 3 | 3 | 2 | 1 | 3 | 1 |
| SSK112  | 1 | - | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 | - | - | - |
| HIN100  | 2 | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| MAL100  | 2 | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| TAM100  | 2 | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| CVL 322 | 4 | 3 | 2 | 3 | 1 | 1 | - | 1 | - | 1 | 1 | 1 | - | - | - | - |
| CVL 316 | 4 | 3 | 2 | 2 | 1 | 1 | - | - | - | 1 | 1 | - | - | 3 | 2 | - |
| CVL 323 | 4 | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | 1 | 1 | - |
| CVL 333 | 4 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | - | - | 3 | - | - |
| CVL 390 | 2 | 3 | 2 | 2 | 3 | 3 | 2 | - | _ | 3 | 3 | 3 | _ | 3 | 3 | 1 |
| CVL 392 | 1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | - |
| PHY271  | 3 | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | 1 | - | - | - |

| SSK113  | 1  | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |
|---------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVL453  | 3  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | - |
| CVL464  | 3  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 | - |
| CVL455  | 3  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 1 | - | - | 3 | 3 | 2 |
| CVL471  | 3  | 3 | 3 | - | 2 | 1 | 1 | - | - | 2 | 1 | - | 1 | 3 | - | - |
| CVL474  | 3  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | 2 | 3 | - | - |
| CVL 491 | 2  | 1 | - | - | 2 | - | - | - | - | 3 | 3 | - | - | 2 | - | - |
| CVL 493 | 2  | 3 | 3 | - | 2 | 2 | 3 | - | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 1 |
| CVL 497 | 1  | - | 3 | - | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | - | - | 2 |
| MNG400  | 3  | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |
| CHY259  | 3  | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CVL 480 | 3  | 3 | 3 | 3 | - | 2 | - | - | 2 | - | - | 2 | 1 | - | - | 3 |
| CVL 458 | 3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CVL 462 | 3  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | - |
| CVL 499 | 10 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 |
| CSE 479 | 3  | 2 | 2 | 2 | - | - | - | - | 2 | - | - | - | - | 1 | - | 2 |



Fig.B. 2.1.4 (a) Compliance of 2010 Curriculum (2014 Regulation) towards POs and PSOs

| PO/PSO | Mapped Subjects   |
|--------|---|
| PO01   | 15 MAT111; 15CSE 100; 15 PHY 100; 15 PHY 181; 15 EEE180; 15MEC 100; 15 MAT121; 15 CHY 100; 15CVL111; 15CVL102; 15CSE 102; 15CSE180; 15CVL112; 15CHY181; 15MEC180; 15CVL201; 15CVL202; 15CVL203; 15CVL204; 15MAT204; 15CVL281; 15CVL282; 15CVL211; 15CVL212; 15CVL213; 15CVL214; 15MAT212; 15CVL285; 15CVL286; 15CVL301; 15CVL302; 15CVL303; 15ENV300; 15MAT214; 15CVL381; 15CVL382; 15CVL311; 15CVL312; 15CVL385; 15CVL386; 15CVL313; 15CVL314; 15CVL401; 15CVL402; 15CVL481; 15CVL403; 15CVL433; 15CVL433; 15CVL450; 15CVL456; 15CVL490; 15CVL495; 15 CVL 439 ; 15CVL441; 15CVL471; 15CVL499;              |
| PO02   | 15 MAT111; 15CSE 100; 15 PHY 100; 15 PHY 181; 15 EEE180; 15MEC 100; 15 MAT121; 15 CHY 100; 15CVL102; 15CSE 102; 15CSE180; 15CVL112; 15CHY181; 15MEC180; 15CVL201; 15CVL202; 15CVL203; 15CVL204; 15MAT204; 15HUM234; 15CVL281; 15CVL282; 15CVL211; 15CVL212; 15CVL213; 15CVL214; 15MAT212; 15ENG233; 15CVL286; 15 SSK221; 15CVL301; 15CVL302; 15CVL303; 15ENV300; 15MAT214; 15CVL382; 15SSK321; 15CVL311; 15CVL312; 15CVL386; 15CVL313; 15CVL314; 15SSK331; 15CVL401; 15CVL402; 15CVL481; 15CVL403; 15CVL433; 15CVL433; 15CVL450; 15CVL456; 15CVL490; 15CVL495; 15 CVL 439 ed; 15CVL441; 15CVL471; 15CVL499; |
| PO04   | 15 MAT111; 15 PHY 181; 15MEC 100; 15 CHY 100; 15CVL112; 15MAT204; 15CVL212; 15CVL214; 15CVL285; 15CVL286; 15 SSK221; 15CVL303; 15ENV300; 15MAT214; 15CVL381; 15CVL382; 15SSK321; 15CVL311; 15CVL385; 15CVL386; 15CVL313; 15CVL314; 15SSK331; 15CVL481; 15CVL456; 15CVL490; 15CVL495; 15 CVL 439; 15CVL471; 15CVL499;  |
| PO05   | 15 MAT111; 15CSE 100; 15 PHY 181; 15CVL102; 15CSE180; 15CVL112; 15MEC180; 15CVL203; 15CVL204; 15CVL301; 15CVL302; 15CVL381; 15CVL311; 15CVL386; 15CVL313; 15CVL401; 15CVL481; 15CVL433; 15CVL456; 15CVL490; 15CVL495; 15 CVL 439; 15CVL499;   |

Table B.2.1.4 (b) Subjects mapped to different POs & PSOs - 2015 curriculum

|      | 15 PHY 181; 15MEC 100; 15CUL 101; 15CVL111; 15CVL102; 15CUL111; 15CVL204; 15HUM234; 15HUM240;      |
|------|--|
| DOOG | 15ENG230; 15AVP201; 15CVL212; 15 HUM239; 15AVP211; 15CVL301; 15CVL303; 15ENV300; 15CVL381;         |
| F000 | 15CVL386; 15CVL313; 15CVL401; 15CVL481; 15CVL403; 15CVL450; 15CVL490; 15CVL495; 15CVL471;          |
|      | 15CVL499;  |
| DO07 | 15CUL 101; 15CVL111; 15CUL111; 15CVL204; 15HUM234; 15HUM240; 15CVL212; 15 HUM239; 15ENV300;        |
| F007 | 15CVL381; 15CVL313; 15CVL403; 15CVL 453; 15CVL456; 15CVL490; 15CVL495; 15CVL471; 15CVL499;         |
|      | 15 ENG 111; 15CSE 100; 15 EEE180; 15CUL 101; 15CUL111; 15HUM234; 15HUM240; 15AVP201; 15CVL212; 15  |
| PO08 | HUM239; 15 SSK221; 15AVP211; 15CVL303; 15ENV300; 15CVL386; 15SSK331; 15CVL401; 15CVL490; 15CVL495; |
|      | 15CVL471; 15CVL499;  |
|      | 15 ENG 111; 15CSE 100; 15 EEE180; 15CUL 101; 15CVL111; 15MEC180; 15CUL111; 15CVL204; 15HUM234;     |
|      | 15HUM240; 15TAM101; 15ENG230; 15CVL281; 15CVL282; 15AVP201; 15CVL214; 15 HUM239; 15 TAM111;        |
| PO09 | 15HIN111; 15MAL111; 15CVL285; 15CVL286; 15 SSK221; 15AVP211; 15CVL302; 15ENV300; 15CVL381;         |
|      | 15CVL382; 15SSK321; 15CVL311; 15CVL385; 15CVL386; 15CVL313; 15SSK331; 15CVL481; 15CVL403;          |
|      | 15CVL433; 15CVL490; 15CVL495; 15 CVL 439 ; 15CVL441; 15CVL499;                                     |
|      | 15 ENG 111; 15CSE 100; 15 EEE180; 15MEC 100; 15CUL 101; 15MEC180; 15CUL111; 15HUM234; 15HUM240;    |
|      | 15TAM101; 15ENG230; 15CVL281; 15CVL282; 15AVP201; 15CVL214; 15 HUM239; 15 TAM111; 15HIN111;        |
| PO10 | 15MAL111; 15ENG233; 15CVL285; 15CVL286; 15 SSK221; 15AVP211; 15CVL302; 15ENV300; 15CVL381;         |
|      | 15CVL382; 15SSK321; 15CVL311; 15CVL385; 15CVL386; 15CVL313; 15SSK331; 15CVL481; 15CVL433;          |
|      | 15CVL456; 15CVL490; 15CVL495; 15 CVL 439 ; 15CVL441; 15CVL499;                                     |
| DO11 | 15CUL 101; 15CUL111; 15HUM234; 15HUM240; 15ENG230; 15AVP201; 15 HUM239; 15AVP211; 15CVL381;        |
| FOIT | 15SSK321; 15CVL386; 15CVL401; 15CVL481; 15CVL490(pp); 15CVL495; 15CVL499                           |
|      | 15 ENG 111; 15 PHY 100; 15 EEE180; 15MEC 100; 15CUL 101; 15 MAT121; 15CVL102; 15CVL112; 15MEC180;  |
|      | 15CUL111; 15CVL203; 15MAT204; 15HUM234; 15HUM240; 15ENG230; 15CVL282; 15AVP201; 15CVL214; 15       |
| PO12 | HUM239; 15CVL285; 15CVL286; 15 SSK221; 15AVP211; 15CVL301; 15CVL302; 15ENV300; 15CVL381;           |
|      | 15CVL382; 15SSK321; 15CVL311; 15CVL386; 15SSK331; 15CVL403; 15CVL 453; 15CVL433; 15CVL450;         |
|      | 15CVL490; 15CVL495; 15CVL471; 15CVL499;  |

|      | 15CSE 100; 15 PHY 181; 15CUL 101; 15CVL111; 15CVL102; 15CSE 102; 15CSE180; 15MEC180; 15CUL111; |
|------|--|
|      | 15CVL201; 15CVL202; 15CVL203; 15CVL204; 15MAT204; 15CVL281; 15CVL282; 15CVL212; 15CVL213;      |
|      | 15CVL214; 15CVL285; 15CVL286; 15CVL301; 15CVL302; 15CVL303; 15ENV300; 15CVL381; 15CVL382;      |
| PS01 | 15CVL311; 15CVL312; 15CVL385; 15CVL386; 15CVL313; 15CVL314; 15CVL401; 15CVL402; 15CVL481;      |
|      | 15CVL403; 15CVL 453; 15CVL433; 15CVL450; 15CVL456; 15CVL490; 15CVL495; 15CVL441; 15CVL471;     |
|      | 15CVL499;  |
|      | 15CSE 100; 15 PHY 181; 15CUL 101; 15CSE 102; 15CSE180; 15CVL112; 15MEC180; 15CUL111; 15CVL285; |
| PSO2 | 15CVL286; 15ENV300; 15CVL381; 15CVL382; 15CVL312; 15CVL386; 15CVL314; 15CVL402; 15CVL481;      |
|      | 15CVL456; 15CVL490(pp); 15CVL495; 15 CVL 439 ; 15CVL441; 15CVL499;                             |
| PSO3 |  |
| 1505 | 15CVL285; 15ENV300; 15CVL381; 15CVL382; 15CVL386; 15CVL481; 15CVL490; 15CVL495; 15CVL499;      |

| Subject    | Credit | PO1 | PO2 | PO3 | PO4 | PO5 | <b>PO6</b> | <b>PO7</b> | <b>PO8</b> | <b>PO9</b> | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|------------|--------|-----|-----|-----|-----|-----|------------|------------|------------|------------|------|------|------|------|------|------|
| 15 ENG 111 | 3      | -   | -   | -   | -   | -   | -          | -          | 2          | 2          | 3    | -    | 2    | -    | -    | -    |
| 15 MAT111  | 3      | 3   | 3   | -   | 2   | 1   | -          | -          | -          | -          | -    | -    | -    | -    | -    | -    |
| 15CSE 100  | 4      | 2   | 2   | 3   | -   | 3   | -          | -          | 3          | 3          | 3    | -    | -    | 3    | 2    | -    |
| 15 PHY 100 | 3      | 3   | 3   | -   | -   | -   | -          | -          | -          | -          | -    | -    | 1    | -    | -    | -    |
| 15 PHY 181 | 1      | 2   | 2   | 2   | 2   | 2   | 1          | -          | -          | -          | -    | -    | -    | 1    | 2    | -    |
| 15 EEE180  | 1      | 3   | 3   | 3   | -   | -   | -          | -          | 3          | 3          | 3    | -    | 1    | -    | -    | -    |
| 15MEC 100  | 3      | 3   | 3   | 3   | 3   | -   | 2          | -          | -          | -          | 3    | -    | 3    | -    | -    | -    |
| 15CUL 101  | 2      | -   | -   | -   | -   | -   | 2          | 3          | 3          | 2          | 3    | 2    | 2    | 3    | 3    |      |
| 15 MAT121  | 4      | 3   | 3   | 1   | -   | -   | -          | -          | -          | -          | -    | -    | 1    | -    | -    | -    |
| 15 CHY 100 | 3      | 3   | 3   | 2   | 1   | -   | -          | -          | -          | -          | -    | -    | -    | -    | -    | -    |
| 15CVL111   | 1      | 3   | -   | -   | -   | -   | 2          | 2          | -          | 3          | -    | -    | -    | 1    | -    | 1    |
| 15CVL102   | 3      | 2   | 3   | -   | -   | 3   | 3          | -          | -          | -          | -    | -    | 1    | 3    | -    | -    |
| 15CSE 102  | 3      | 2   | 2   | 2   | -   | -   | -          | -          | -          | -          | -    | -    | -    | 3    | 2    | -    |
| 15CSE180   | 1      | 1   | 2   | 2   | -   | 1   | -          | -          | -          | -          | -    | -    | -    | 3    | 2    | -    |
| 15CVL112   | 2      | 3   | 3   | 3   | 2   | 3   | -          | -          | -          | -          | -    | -    | 3    | -    | 3    | -    |
| 15CHY181   | 1      | 3   | 3   | 1   | -   | -   | -          | -          | -          | -          | -    | -    | -    | -    |      | -    |
| 15MEC180   | 1      | 2   | 2   | 1   | -   | 1   | -          | -          | -          | 2          | 1    | -    | 1    | 1    | 1    | -    |
| 15CUL111   | 2      | -   | -   | -   | -   | -   | 2          | 3          | 3          | 2          | 3    | 2    | 2    | 3    | 3    | -    |
| 15CVL201   | 3      | 3   | 3   | 2   | -   | -   | -          | -          | -          | -          | -    | -    | -    | 3    | -    | -    |

 Table B 2.1.4 (d) Correlation level to different POs and PSOs (2015 curriculum)

| 15CVL202  | 3 | 3 | 3 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15CVL203  | 4 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | 2 | 3 | - | - |
| 15CVL204  | 4 | 3 | 3 | 1 | - | 1 | 1 | 1 | - | 1 | - | - | - | 3 | - | - |
| 15MAT204  | 3 | 2 | 2 | 1 | 1 | - | - | - | - | - | - | - | 1 | 2 | - | - |
| 15HUM234  | 2 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 3 | - | - | - |
| 15HUM240  | 2 | - | - | - | - | - | 3 | 3 | 2 | 3 | 3 | 1 | 2 | - | - | - |
| 15TAM101  | 2 | - | - | - | - | - | - | - | - | 2 | 3 | - | - | - | - | - |
| 15SWK230  | 2 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15ENG230  | 2 | - | - | - | - | - | 2 | - | - | 2 | 3 | 1 | 2 | - | - | - |
| 15CVL281  | 1 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - | - |
| 15CVL282  | 2 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | 2 | 3 | - | - |
| 15AVP201  | 1 | - | - | - | - | - | 3 |   | 3 | 3 | 2 | 2 | 2 | - | - | - |
| 15CVL211  | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| 15CVL212  | 3 | 3 | 3 |   | 2 |   | 2 | 2 | 1 | - | - | - | - | 3 | - | - |
| 15CVL213  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| 15CVL214  | 3 | 3 | 3 | 1 | 1 | - | - | - | - | 1 | 1 | - | 1 | 3 | - | - |
| 15MAT212  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| 15 HUM239 | 2 | - | - | - | - | - | 2 | 3 | 3 | 2 | 3 | 2 | 2 | - | - | - |
| 15 TAM111 | 2 | - | - | - | - | - | - | - | - | 2 | 3 | - | - | - | - | - |
| 15HIN111  | 2 | - | - | - | - | - | - | - | - | 2 | 3 | - | - | - | - | - |
| 15MAL111  | 2 | - | - | - | - | - | - | - | - | 2 | 3 | - | - | - | - | - |

| 15ENG233  | 2 | - | 2 | - | - | - | - | - | - | - | 3 | - | - | - | - | - |
|-----------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15CVL285  | 1 | 1 | - | - | 3 | - | - | - | - | 3 | 3 | - | 2 | 1 | 1 | 1 |
| 15CVL286  | 1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | - |
| 15 SSK221 | 2 | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |
| 15AVP211  | 1 | - | - | - | - | - | 3 | - | 3 | 3 | 2 | 2 | 2 | - | - | - |
| 15CVL301  | 3 | 2 | 3 | - | - | 3 | 3 | - | - | - | - | - | 1 | 3 | - | - |
| 15CVL302  | 4 | 3 | 3 | 3 | - | 2 | - | - | - | 2 | 1 | - | 2 | 3 | - | - |
| 15CVL303  | 4 | 3 | 3 | 3 | 1 | - | 1 | - | 1 | - | - | - | - | 3 | - | - |
| 15ENV300  | 3 | 1 | 1 | 1 | 1 | - | 2 | 3 | 3 | 1 | 2 | - | 1 | 1 | 1 | 1 |
| 15MAT214  | 3 | 2 | 2 | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - |
| 15CVL381  | 2 | 1 |   | 3 | 3 | 3 | 3 | 1 | - | 3 | 3 | 3 | 3 | 1 | 3 | 1 |
| 15CVL382  | 1 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | 1 |
| 15SSK321  | 2 | - | 3 | - | 2 | - | - | - | - | 3 | 3 | 2 | 3 | - | - | - |
| 15CVL390  | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15CVL311  | 4 | 3 | 2 | 2 | 1 | 2 | - | - | - | 2 | 1 | - | 2 | 3 | - | - |
| 15CVL312  | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 | - |
| 15CVL385  | 1 | 1 | - | - | 2 | - | - | - | - | 3 | 3 | - | - | 2 | - | - |
| 15CVL386  | 2 | 3 | 3 |   | 2 | 2 | 3 |   | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 1 |
| 15CVL313  | 3 | 3 | 2 | 2 | 1 | 1 | 1 | 1 |   | 1 | 1 | - | - | 3 | - | - |
| 15CVL314  | 4 | 3 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | 2 | 2 | - |
| 15PHY333  | 3 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| 15SSK331  | 2 | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |

| 15CVL401  | 4  | 2 | 3 | 1 | - | 1 | 3 | - | 2 | - | - | 2 | - | 1 | - | 3 |
|-----------|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 15CVL402  | 3  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 | - |
| 15CVL481  | 1  | 3 | 3 | 3 | 3 | 3 | 2 | - | - | 3 | 3 | 3 | - | 3 | 3 | 1 |
| 15CVL403  | 3  | 2 | 3 | 2 | - | - | 2 | 1 | - | 1 | - | - | 1 | 3 | - | - |
| 15CVL 453 | 3  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | 2 | 1 | - | - |
| 15CVL433  | 3  | 3 | 3 | 3 | - | 2 | - | - | - | 2 | 1 | - | 2 | 3 | - | - |
| 15CVL450  | 3  | 3 | 3 | 3 | - | - | 2 | - | - | - | - | - | 2 | 3 | - | - |
| 15CVL456  | 3  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 1 | - | - | 2 | 2 | - |
| 15CVL490  | 2  | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 |
| 15CVL495  | 2  | 2 | 2 | 2 | 2 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 |
| 15 CVL439 | 3  | 3 | 2 | 2 | 1 | 1 | - | - | - | 1 | 1 | - | - | - | 3 | - |
| 15CVL441  | 3  | 3 | 3 | 2 | - | - | - | - | - | 1 | 1 | - | - | 2 | 2 | - |
| 15CVL458  | 3  | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 3 |
| 15CVL471  | 3  | 3 | 3 | 3 | 3 |   | 2 | 2 | 2 | - | - | - | 3 | 3 | - | - |
| 15CVL499  | 10 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 1 |



Fig. B. 2.1.4 (b) Compliance of 2015 Curriculam towards POs and PSOs

#### 2.2. Teaching-Learning Processes

#### 2.2.1. Describe Processes followed to improve quality of Teaching & Learning

#### Academic schedule

• Department academic processes are aligned with the institution academic calendar having three terms in each semester. The details of the process involved is shown in Fig. B. 2.2.1.



Fig.B.2.2.1 Academic process

- A handbook on regulations, curriculum and syllabus is distributed to students after the orientation programme in the first year. These details are listed in the institute intranet also.
- An academic calendar containing the working days and the schedule of all exams and other events are made available to all students at the beginning of the academic year. This will help students as well as teachers to plan well for teaching and learning.
- Faculty handling each subject maintains a work register. A course plan is prepared by each faculty before commencement of the semester. This helps the faculty to keep track of the coverage of topics. The topic handled in each class, details of quizzes and assignments, marks obtained by students etc.are entered in the work register.
- Attendance as well as marks are entered in the online portal regularly so that students can judge themselves. Through this portal parents are also able to monitor the performance of their wards.

#### **Teaching pedagogy**

- The COs and the CO PO mapping are emphasized to the students by each course mentor at the beginning of the semester.
- CO attainment level calculations are done after each assessment, which helps to take remedial measures in the way of teaching, if there are any gaps.
- Student feedback is taken three times during a semester online, which also helps in improving the way of teaching.
- Along with blackboard teaching, faculty make use of multimedia tools for presentations and educational videos in the classes.
- Students are encouraged to make use of online courses like NPTEL, QEEE classes (details are given inTable B 2.2.1 (a) ) and get certified.

| Sl No | Course   | Term             |
|-------|--|------------------|
| 1.    | Durability of concrete   | 2016 – 17 (Even) |
| 2.    | Highway geometric design- Transportation                             | 2016 – 17 (Even) |
| 3.    | Air pollution control engineering                                    | 2016 – 17 (Even) |
| 4.    | Shear force and bending moment diagram                               | 2016 – 17 (Odd)  |
| 5.    | Shear Strength of Soil   | 2016 – 17 (Odd)  |
| 6.    | Test on concrete   | 2016 – 17 (Odd)  |
| 7.    | Construction planning – Network Analysis                             | 2015 – 16 (Even) |
| 8.    | Deflection of statically determinate structures                      | 2015 – 16 (Even) |
| 9.    | Cement Production, Composition and Chemistry - Concrete Technology   | 2015 – 16(Even)  |
| 10.   | Compaction of Soil   | 2015 – 16 (Even) |
| 11.   | Design of Earthquake resistant design of RCC<br>multistoreyed frames | 2015 – 16 (Even) |
| 12.   | Basic design of steel structures                                     | 2015 – 16 (Even) |
| 13.   | Kinematics of particles  | 2015 – 16 (Even) |
| 14.   | Introduction to Structural Engineering                               | 2015 – 16 (Even) |
| 15.   | Smart Structures   | 2015 - 16(Odd)   |
| 16.   | Transportation and Traffic Engineering                               | 2015 – 16 (Odd)  |
| 17.   | Flexure in beams - Structural Mechanics                              | 2015 – 16 (Odd)  |

Table B. 2.2.1 (a) List of QEEE Programmes

- Regular quizzes and tutorials are conducted whose marks will contribute to the continuous assessment component.
- Students are offered opportunities to work in collaboration with international students for their project.
- Industrial visits and site visits are organized in connection with each subject (wherever possible) for the students to have an understanding about the practical civil engineering situations.
- Students are given appropriate field related assignments also.
- Students are given opportunity to hear and interact with experts from Industry and Academia by way of Invited talks/guest lectures.
- Workshops, conferences and faculty development programmes are arranged by the department. Faculty and students are also encouraged and sponsored to attend conferences and workshops.
- Soft skill development is enhanced through special courses offered by CIR.

#### Performance analysis and follow up

- Regular class committee meetings are conducted during each semester which helps to monitor the performance of students. (impact analysis)
- Feedback from the different class committee meetings, site visits and invited guest lectures are discussed and evaluated by the department advisory committee every semester in order to effect further improvements.
- Remedial classes are conducted for weak students outside the working hours (run time redo classes, contact classes).
- Student exchange opportunities are extended to deserving students for doing their project (a semester abroad) by taking an equivalent course credit in various international universities.
- Internships are also offered to deserving students in foreign universities as well as in various industries.

Table B. 2.2.1 (b) gives the details of students who had visited foreign universities during recent years.

| Sl.<br>No. | Name                           | Academic<br>year | University   | Academic Purpose                     |  |  |
|------------|--------------------------------|------------------|--|--------------------------------------|--|--|
| 1          | Mr.Ramjit N.                   | 2017-18          | University of British<br>Columbia, Vancouver,<br>Canada. | One month<br>internship              |  |  |
| 2          | Mr.Pavithran B. V.             | 2017-18          | University of British<br>Columbia, Vancouver,<br>Canada. | One month<br>internship              |  |  |
| 3          | Ms.Elavarasi Era Su            | 2016-17          | Politecnico di Milano                                    | One semester –<br>Final year project |  |  |
| 4          | Mr.Mitesh Doshi                | 2016-17          | Politecnico di Milano                                    | One semester –<br>Final year project |  |  |
| 5          | Ms.Shanmuga Priya<br>Kandasamy | 2015-16          | Politecnico di Milano                                    | One semester –<br>Final year project |  |  |
| 6          | Ms. Amrita<br>Sabhapathy       | 2015-16          | Politecnico di Milano                                    | One semester –<br>Final year project |  |  |

 Table B.2.2.1 (b) Details of Students who visited foreign universities as part of their programme

## 2.2.2. Quality of end semester examination, internal semester question papers, assignments and evaluation

Fig. B.2.2.2 (a) depicts the process for setting question papers and evaluation. Question papers for Periodical 1, Periodical 2 and End Semester exams are set by the course mentors in accordance with the guidelines from the Controller of examinations.



Fig.B. 2.2.2(a) Process for question paper setting and evaluation

 A weightage ratio is maintained for Periodicals, Continuous assessment and End semester examination for all theory and laboratory courses are listed in Table B.
 2.2.2 (a).

|                 | Theor        | y Course                 |                                | Laborato                 | ry Course                      | Project                  |                                |  |
|-----------------|--------------|--------------------------|--------------------------------|--------------------------|--------------------------------|--------------------------|--------------------------------|--|
| Periodical<br>1 | Periodical 2 | Continuous<br>Assessment | End<br>Semester<br>Examination | Continuous<br>Assessment | End<br>Semester<br>Examination | Continuous<br>Assessment | End<br>Semester<br>Examination |  |
| 15              | 15           | 20                       | 50                             | 80                       | 20                             | 60                       | 40                             |  |

Table B.2.2.2 (a) Details of weightage for assessments

- Question papers are prepared conforming to Bloom's taxonomy levels and all questions are linked with COs and POs. It is ensured that questions map with all levels of bloom's taxonomy in end semester examination.
- Two sets of question papers along with answer keys are prepared for the end semester examination. Out of these two sets, one set is selected randomly by the Controller of Examination.
- No optional questions (all questions are compulsory) are given for examinations.

- The question paper prepared by the faculty is reviewed by the Chairperson/Programme Co-ordinator with the support of Academic coordinator.
- Centralized valuation, review, grade formalization meetings are conducted to maintain the transparency in the valuation of answer scripts.
- Quizzes / tutorials / presentations conducted in the class as well as the take-home assignments constitute the Continuous Assessment component.
- The assignments given to the students by way of case study analysis or application level questions, will be presented by the students before the whole class. This has been found to improve the peer learning.

#### Analysis of learning levels

The academic procedures for course delivery and assessment are based on CO-PO-PSO attainment measurements (both by direct and indirect methods). To ensure compliance of the curriculum with CO-PO-PSO attainment, the student performance in all assessments is analyzed for CO-PO-PSO attainments. The department has an audit system for reviewing the attainments. The students give feedback on the course through class committees and online feedback systems. The results are presented before the school-level review panel. The feedback is used for initiating improvement plans in syllabi, curriculum, delivery, and infrastructure.

- After every assessment conducted for a class, the concerned faculty will enter the details in the Inpods software.
- The details are question wise Course Outcome (COs), Bloom's Taxonomy Level (BTL) and Mark.
- Inpods will capture all the data and provide consolidated information for each of the courses as bar chart.

The following items can be analyzed using the Inpods Software

1. Syllabus Coverage in each exam



2. BTL of the question paper – Quality of the question paper



3. Performance of the students



4. Overall CO attainment



**Overall CO attainment** 

#### 2.2.3. Quality of student projects (20)

Faculty will provide a few problem statements or a thrust area based on their area of expertise. Students explore each of those based on their subject interest and by referring relevant and recent technical publications. Once the students identify their topic, more discussions are carried out with the faculty for creating a well-defined problem statement. The same with literature backing is presented to the expert committee / review panel during the zeroth review to take in their comments. Based on the consensus of the expert committee and the guide, further additions or corrections are made on the problem statement to fine-tune and finalize the topic. The entire process involved in the management of student projects is shown in Fig. B 2.2.3.


Fig.B.2.2.3 Process involved in managing student projects

Through the projects students are encouraged to think critically, solve challenging problems, and develop skills through experimental/analytical studies. Project will be a multifaceted assignment that will serve as a culminating academic experience for students during their final semester of graduate program. Some of the projects will be of interdisciplinary nature that will require students to apply skills or investigate issues across different subject areas like sustainability, advanced materials, various infrastructure applications, water management, environmental issues, etc. Titles of project works completed during the academic year (2017-2018) is listed in Table B 2.2.3 (a) and the details of projects supported by internal funding are presented in Table B. 2.2.3 (b).

| 1.  | Study on Strength and Durability Characteristics of Concrete made using     |
|-----|---|
|     | Copper Slag and Mineral Admixtures  |
| 2.  | Level of Service of Pedestrian Sidewalks by Qualitative Evaluation          |
| 3.  | Metakaolin Stabilized Rammed Earth as a Sustainable Construction Material   |
| 4.  | Enclosed Stone Column on Soft Clay  |
| 5.  | Bioremediation of Engine Oil Contaminated Soil                              |
| 6.  | Improvement of Dynamic Properties of Sand using High Impact Polystyrene     |
| 7.  | Effective Utilization of Ceramic Waste as Replacement for Coarse            |
|     | Aggregate in Concrete   |
| 8.  | Degradation of Reactive Violet Dye using Advanced Oxidation Process and     |
|     | Management of Emerging Contaminants   |
| 9.  | Study on Partial Replacement of M - Sand With Dolomite - Silica Sand on     |
|     | Cement Mortar   |
| 10. | Photocatalytic Degradation of Recalcitrant Contaminants and its             |
|     | Management - A Study  |
| 11. | Feasibility of Construction of a Coastal Reservoir at Godavari Outlet       |
| 12. | Feasibility of Impounding Godavari Flood ,Water in Coastal Reservoir to     |
|     | meet Water Demand of Andhra Pradesh   |
| 13. | Estimation of the soil loss in micro watersheds using morphometric analysis |
|     | and GIS   |
| 14. | Fly Ash based Geo-Polymer Concrete blended With GGBS                        |
| 15. | Study on Performance of the concrete with partial replacement of Fine       |
|     | Aggregate With Waste Foundry Sand Incorporating Deep Penetration            |
|     | Crystalline Admixture using Response Surface Method                         |
| 16. | Performance Evaluation of Sand and Seashell as Infill Materials in Coir     |
|     | Geocell and HDPE Geocell for Cellular Confinement of Soil                   |

Table B.2.2.3 (a) List of Student Projects (2014-18 batch)

 Table B 2.2.3 (b) List of projects awarded internal funding

| Sl.No | Title of        | Student       | Remarks                               |
|-------|-----------------|---------------|---------------------------------------|
|       | project         | Details       |                                       |
| 1     | IFRP No.        | Students      | Published paper in Geotechnical       |
|       | 31/15-16        | (2016):       | Engineering Journal (Ramkrishnan R.,  |
|       | : Stabilization | Karthik V,    | Karthik V., Mukund S. Unnithan, Kiran |
|       | of Seepage      | Mukund        | Balaji R., Athul Vinu M., Anju        |
|       | Induced Soil    | Unnithan,     | Venugopalan (2017), "Stabilization of |
|       | Mass            | Athul Vinu,   | Seepage Induced Soil Mass Movements   |
|       | Movements       | Kiran Balaji, | using Sand Drains", Geotechnical      |
|       | using Sand      | Anju          | Engineering, SEAGS and AGSSEA, Vol.   |
|       | Drains          | Venugopal     | 48, No. 4, 129-137)                   |
|       |                 |               |                                       |

|   |              | Students       | Published paper in GeoChina Conference     |
|---|--------------|----------------|--|
|   |              | (2017):        | (Ravichandran, D., E. Nishok Kumar, R.     |
|   |              | Ravichandran   | Ramkrishnan, KarthikViswanathan, S.        |
|   |              | D, Nishok      | Sandeep, and K. Manasa (2018),             |
|   |              | Kumar, S       | "Assessment of Mass Movements and          |
|   |              | Sandeep, K     | Critical Phreatic Levels in Soil Slopes",  |
|   |              | Manasa         | Civil Infrastructures Confronting Severe   |
|   |              |                | Weathers and Climate Changes               |
|   |              |                | Conference, Springer, Cham, 161-186)       |
|   |              |                | Paper submitted to International Journal   |
|   |              |                | of Geotechnical Engineering                |
|   |              |                | (Ravichandran D., Ramkrishnan R.,          |
|   |              |                | Nishok E., Sandeep S. Nair, Manasa K.,     |
|   |              |                | "Prediction of Critical Phreatic Level for |
|   |              |                | Slope Stability of Different Types of Soil |
|   |              |                | Using a Scaled Down Laboratory             |
|   |              |                | Model")                                    |
| 2 | Use of Boron | Satish, A.J.,  | Satish, A.J., Aravind, P.N., Hakesh, P.V., |
|   | Carbide in   | Aravind, P.N., | Vignesh, V., Mini K.M(2018), "Influence    |
|   | concrete for | Hakesh, P.V.,  | of boron carbide addition on performance   |
|   | neutron      | Vignesh, V.    | and neutron shielding ability of cement    |
|   | shielding    |                | mortar mix", International Journal of      |
|   | purposes     |                | Engineering and Technology(UAE),7(4),      |
|   |              |                | 48-55.                                     |
|   |              |                | Funded project submission to BRNS          |
|   |              |                | "Development of boron carbide cement       |
|   |              |                | concrete for neutron shielding" in         |
|   |              |                | collaboration with IGCAR                   |

Design projects follow BIS standards and once completed, are verified or evaluated by comparing them with existing standards or designs using advanced modelling and tool usage. This ensures that the students are well versed with the building standards and codes in the country and are capable of using relevant software and tools in their area of interest.

Students are also advised to identify problems related to the real life situations and to get an insight into the innovative technologies in the field of civil engineering for the last three years to introduce contents beyond the syllabus towards the attainment of the COs/POs.

# **Details of POs and PSOs addressed through the projects**

The COs are defined to cover all the POs and PSOs and the mapping and affinity levels are shown in Table B. 2.2.3 (c).

|     |                            | <b>PO1</b> | <b>PO2</b> | PO3 | <b>PO4</b> | <b>PO5</b> | <b>PO6</b> | <b>PO7</b> | <b>PO8</b> | <b>PO9</b> | <b>PO10</b> | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|-----|----------------------------|------------|------------|-----|------------|------------|------------|------------|------------|------------|-------------|------|------|------|------|------|
| CO1 | Create a set up through    |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | proper design and          |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | investigate the system     | 3          | 3          | 3   | 3          |            |            |            |            |            |             |      |      | 3    |      |      |
|     | using the engineering      |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | knowledge acquired         |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
| CO2 | Estimate and manage the    |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | cost and time of the       |            |            |     |            |            |            |            |            |            |             | 3    |      |      | 3    | 3    |
|     | project                    |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
| CO3 | Present the project with   |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | clarity and ethics in both |            |            |     |            |            |            |            | 3          | 3          | 3           |      | 3    |      |      |      |
|     | oral and written mode      |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
| CO4 | Develop a team and         |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | effectively participate in |            |            |     |            |            |            |            | 2          | 2          |             |      |      |      |      |      |
|     | the team to execute the    |            |            |     |            |            |            |            | 3          | 3          |             |      |      |      |      |      |
|     | project                    |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
| CO5 | Support the                |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | environmental, social      |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | and engineering            |            |            |     |            | 3          | 3          | 3          | 3          | 3          |             |      | 3    |      |      | 3    |
|     | discipline through the     |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |
|     | project                    |            |            |     |            |            |            |            |            |            |             |      |      |      |      |      |

The evaluation pattern is shown through the tables listed below. It will have a minimum of three internal reviews by the expert panel and guide, and two end semester reviews – one final review with an internal examiner and one with an external examiner. Internal reviews will carry 60 marks and the End-Semester, one Internal and one with External expert will carry 20 marks each.

| Continuous   | Review 1          | 15  |
|--------------|-------------------|-----|
| Assessment   | Review 2          | 15  |
|              | Review 3          | 15  |
|              | Review 4          | 15  |
| Sub Total    |                   | 60  |
| End Semester | Internal Examiner | 20  |
|              | External Examiner | 20  |
| Total        |                   | 100 |

|        | CO3                         | CO1   | CO3, CO4               | CO1                            | CO3,CO5              |               |
|--------|-----------------------------|---|------------------------|--------------------------------|----------------------|---------------|
| Review | Communication(10)<br>(PO10) | Project Progress/<br>Implementation (15)<br>(PO2/3/4) | Report(5)<br>(PO8 PO9) | Basic<br>Understanding<br>(15) | Guide<br>(15)<br>(PO | TOTAL<br>(60) |
| 110.   |                             | $(1 \circ 2, 3, 1)$                                   | (100,10))              | (PO1, PSO1)                    | 8/9/12)              |               |
| R1     | Applying                    | Evaluating  | Applying               | Understanding                  | Analyzing            |               |

|               | CO3                         | CO1  | CO3,<br>CO4                | CO1   | CO3,CO5                         |               |
|---------------|-----------------------------|--|----------------------------|---|---------------------------------|---------------|
| Review<br>No. | Communication(10)<br>(PO10) | Project Progress<br>Implementation (15)<br>(PO2/3/4) | Report(5)<br>(PO8,<br>PO9) | Basic<br>Understanding<br>(15) (PO1,<br>PSO1) | Guide<br>(15)<br>(PO<br>8/9/12) | TOTAL<br>(60) |
| R2            | Applying                    | Evaluating   | Applying                   | Understanding                                 | Analyzing                       |               |

|               | CO3  | CO1  |   | CO3,CO4   | CC   | D1  | CO5                        | CO3,CO5                                       |               |                                 |               |
|---------------|--|--|---|---|--|---|----------------------------|---|---------------|---------------------------------|---------------|
| Review<br>No. | Communicatio<br>(10)<br>(PO10)               | on Project Pro<br>Implementat<br>(PO2/3/4, I   | ogress/<br>tion(15)<br>PSO2)                                | Report (5)<br>(PO8,PO9)                         | ע<br>(1  | Basic<br>Understanding<br>0) (PO1,<br>PSO1)               | Skill (<br>(PO5/12)        | 5) Guide<br>(15)<br>(PO 8/9/12)               | Total<br>(60) |                                 |               |
| R3            | Applying                                     | Evaluat  | ing   | Applying  | ι  | Understanding   | Apply                      | Analyzing                                     |               |                                 |               |
|               | CO3  | C01  |   | CO3,CO4   |  | CO1   | CO5                        | CO3,CO5                                       |               |                                 |               |
| Review<br>No. | Communication<br>(10)<br>(PO10)              | Project Progr<br>Implementatio<br>(PO2/3/4, PS | Project Progress /<br>Implementation(15)<br>(PO2/3/4, PSO2) |   | Project Progress /<br>Implementation(15)<br>(PO2/3/4, PSO2) Rep<br>(PO |   | )                          | Basic<br>Understanding<br>(10)<br>(PO1, PSO1) | 5 (PO5/12     | Cuide<br>(15)<br>(PO<br>8/9/12) | Total<br>(60) |
| R4            | Applying                                     | Evaluatin                                      | g   | Applying  |  | Understanding   | g Apply                    | Analyzing                                     |               |                                 |               |
|               | CO1  | CO1<br>Project                                 | CO5   | CO2<br>Project                                  |  | CO5<br>Social   | CO3,CO4                    | CO5   | Total         |                                 |               |
| Review<br>No. | Basic<br>Understanding<br>(5)<br>(PO1, PSO1) | Implementation<br>(10)<br>(PO2/3/4)            | (5)<br>(PO<br>5)  | Management<br>(5)<br>(PO11,<br>PSO3)            | t ]  | Responsibility/<br>Novelty (5)<br>(PO6/7, PSO3<br>)       | Report<br>(5)<br>(PO8,PO9) | Comprehension<br>(5)<br>(PO12)                | (40)          |                                 |               |
| INT           | Understanding                                | Evaluating                                     | Apply   | Analyzing                                       | A  | Apply/Creating  | Applying                   | Evaluating                                    |               |                                 |               |
|               | CO1  | CO1  | CO5   | CO2   |  | CO5   | CO3,CO4                    | CO5   |               |                                 |               |
| Review<br>No. | Basic<br>Understanding<br>(5)<br>(PO1, PSO1) | Project<br>Implementation<br>(10)<br>(PO2/3/4) | Skill<br>(5)<br>(PO<br>5)                                   | Project<br>Management<br>(5)<br>(PO11,<br>PSO3) | t ]  | Social<br>Responsibility/<br>Novelty (5)<br>(PO6/7, PSO3) | Report<br>(5)<br>(PO8,PO9) | Comprehension<br>(5)<br>(PO12)                | Total<br>(40) |                                 |               |
| EXT           | Understanding                                | Evaluating                                     | Apply   | Analyzing                                       | I  | Apply/Creating  | Applying                   | Evaluating                                    |               |                                 |               |

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# **Overall Break-up**

|                        | 0    | Continuou | s Assessm | ent  | Sub   | Sub End semes |     | Sub   | Total |
|------------------------|------|-----------|-----------|------|-------|---------------|-----|-------|-------|
|                        | R1   | R2        | R3        | R4   | Total | INT           | EXT | Total | Total |
| Communication          | 2.5  | 2.5       | 2.5       | 2.5  | 10    | 0             | 0   | 0     | 10    |
| Project Implementation | 3.75 | 3.75      | 3.75      | 3.75 | 15    | 5             | 5   | 10    | 25    |
| Report                 | 1.25 | 1.25      | 1.25      | 1.25 | 5     | 2.5           | 2.5 | 5     | 10    |
| Basic Understanding    | 3.75 | 3.75      | 2.5       | 2.5  | 12.5  | 2.5           | 2.5 | 5     | 17.5  |
| Guide                  | 3.75 | 3.75      | 3.75      | 3.75 | 15    | 0             | 0   | 0     | 15    |
| Skill                  | 0    | 0         | 1.25      | 1.25 | 2.5   | 2.5           | 2.5 | 5     | 7.5   |
| Social Responsibility  | 0    | 0         | 0         | 0    | 0     | 2.5           | 2.5 | 5     | 5     |
| Project Management     | 0    | 0         | 0         | 0    | 0     | 2.5           | 2.5 | 5     | 5     |
| Comprehension          | 0    | 0         | 0         | 0    | 0     | 2.5           | 2.5 | 5     | 5     |
| Total                  | 15   | 15        | 15        | 15   | 60    | 20            | 20  | 40    | 100   |

Details of student's publications from their B.Tech projects are given in Table B. 2.2.3 (d).

| Sl.No. | Authors   | Title   | Journal / Conference details   | Year |
|--------|---|---|--|------|
| 1      | Suja.P, Varsha Nair,<br>Tamilarasi, Swetha Krishnan   | Performance evaluation of seashell and sand<br>as infill materials in HDPE and coir geocells  | Innovative Infrastructure<br>Solutions, Volume 4, Issue 1, 1<br>December 2019, Article<br>number 17. | 2019 |
| 2      | Kaarthik Krishna, N.,<br>Sandeep, S., Mini, K.M.  | Study on reinforced concrete beams with helical transverse reinforcement  | IOPConferenceSeries:MaterialsScienceandEngineering,Volume310,Issue 11                                | 2018 |
| 3      | Sugapriya, P., Ramkrishnan,<br>R., Keerthana, G.,<br>Saravanamurugan, S.                                      | Experimental Investigation on Damping<br>Property of Coarse Aggregate Replaced<br>Rubber Concrete   | IOPConferenceSeries:MaterialsScienceandEngineering,Volume310,Issue 11                                | 2018 |
| 4      | Prabha.B, DhanyaSathyan,<br>M.Ananthkumar   | Study on Effectiveness of Processed and<br>Unprocessed Black Liquor pulps in<br>improving the properties of PPC mortar,<br>Concrete and SCC | IOP Conference Series:<br>Materials Science and<br>Engineering, 310(1)                               | 2018 |
| 5      | Ms.Raghavapriya,<br>Karrupusamy,<br>M.Ananthkumar   | Effect of Alkaline Solution with Varying Mix<br>Proportion on Geopolymer Mortar   | IOPConferenceSeries:MaterialsScienceandEngineering,Volume310,Issue 11                                | 2018 |
| 6      | Dr.K.M.Mini, BLP<br>DheerajSwamy,<br>VaibhavRaghavan, K Srinivas,<br>K Narasinga Rao,<br>MahadevanLakshmanan, | Influence of Silica Based Carbon Nano Tube<br>Composites in Concrete  | AdvancedCompositeMaterials: Volume 26, Issue 01,January-February,P.12-17,0.422,                      | 2017 |

Table B.2.2.3 (d) Publications from B.Tech Student Projects

| 7  | P.M.Mrudul, T.Upender,<br>VamsiTarun, Meera<br>Balachandran, K. M. Mini                                     | Study on Silica Infused Recycled Aggregate<br>Concrete using Design of Experiments                    | Journal of Engineering science<br>and Technology, Vol.12, Issue<br>10, October                            | 2017 |
|----|---|---|---|------|
| 8  | Ajithbabu, Abinaya, Prakash<br>Chinnaiyan   | Effect of dyeing & textile industry on Noyyal river water quality, Tiruppur- a case study             | International Journal of Civil<br>Engineering and Technology<br>(IJCIET), IAEME Publication,<br>01.11.17. | 2017 |
| 9  | Ramkrishnan R., Karthik V.,<br>Mukund S. Unnithan, Kiran<br>Balaji R., AthulVinu M. and<br>Anju Venugopalan | Stabilization of seepage induced soil mass movements using sand drains                                | Geotechnical Engineering<br>Journal of the SEAGS &<br>AGSSEA, 48(4):129-137                               | 2017 |
| 10 | Praveen, K., Sathyan,<br>D., Mini, K.M.   | Study on performance of concrete with over-<br>burnt bricks aggregates and micro-silica<br>admixture, | IOPConferenceSeries:MaterialsScienceandEngineering, 149(1),012061   | 2016 |
| 11 | Krishna, N.K., Sandeep,<br>S., Mini, K.M.   | Study on concrete with partial replacement of cement by rice husk ash,                                | IOPConferenceSeries:MaterialsScienceandEngineering, 149(1),012109   | 2016 |
| 12 | BLP DheerajSwamy,<br>VaibhavRaghavan, K Srinivas,<br>K Narasinga Rao,<br>MahadevanLakshmanan, K.M.<br>Mini  | Study on Silica Based Carbon Nano Tube<br>Cement Composites   | International Journal of Earth<br>Sciences and Engineering  | 2015 |

#### 2.2.4. Initiatives related to industry interaction

- The department is associated with various government, quasi-government and private industries in the field of Civil Engineering. The students can do their internship/training in these companies, utilising the facilities of the companies to carry out their project works. Our students visit these companies to get awareness about the different methods, equipment and materials used for the construction of various components of different types of Civil Engineering structures (details are furnished in Table B 2.2.4 (a)). The experts from different industries regularly visit our institute and interact with students about the civil engineering challenges encountered in the field. This exercise helps the students to understand the application of theoretical concepts in practical problem solving.
- The Department of Civil Engineering has signed MoU with the following organisation:
  - Material Transfer agreement on 31<sup>st</sup> January 2018 between Central Plantation Crops Research Institute, Kasargod, a constituent of the Indian council of Agricultural Research, Krishi Bhavan, Delhi as first Party and Amrita Vishwa Vidyapeetham, Ettimadai as the second party for the use of germplasm material(s) / Bacteria – Bacillus spp for research.
- The department takes up consultancy projects for various government, semi government departments and private organisations. These include material property testing, valuation of buildings, monitoring of various construction works, water quality testing etc.

| SI | Industry visited   | Data                        | Mapping   |      |  |
|----|--|-----------------------------|-----------|------|--|
| No | industry visited   | Date                        | POs       | PSOs |  |
| 1  | Metro rail Project, Bangalore                              | 14.12.2018 to<br>16.12.2018 | 1,6, 7, 9 | 1,3  |  |
| 2  | Metro rail Project, Bangalore                              | 11.04.17 &<br>12.04.17      | 1,6, 7, 9 | 1,3  |  |
| 3  | ACC Cement Factory   | 22.04.17                    | 1, 9      | 1, 3 |  |
| 4  | Baralikadu, Pillur dam, Water treatment plant at Karamadai | 28.04.17                    | 1,6       | 1,3  |  |
| 5  | Tunnelling site in NH, Kuthiran, Thrissur                  | 28.02.17                    | 1,6       | 1    |  |
| 6  | Build Mat 2017   | 04.02.17                    | 1,6       | 1,3  |  |
| 7  | Ready Mix Concrete Plant at Neelambur<br>in Coimbatore     | 06.10.16                    | 1, 9      | 1, 3 |  |
| 8  | Ready Mix Concrete Plant ,<br>Kannampalayam , Coimbatore   | 06.09.2016                  | 1, 9      | 1, 3 |  |
| 9  | Lower Bhavani project                                      | 29-07- 2015                 | 1, 6      | 1, 2 |  |
| 10 | Malabar Cements Ltd, Walayar                               | 2-01- 2015.                 | 1, 9      | 1, 3 |  |
| 11 | Sreedaksha Promoters , Saravanampatti                      | 27-01- 2015.                | 1, 9      | 1, 2 |  |

#### Table B.2.2.4 (a) Details of Industrial Visits

Impact analysis of site visits are done based on feedbacks from students. Typical details of feedback form is provided in ANNEXURE B.2.1\*.



The PO attainment for Site Visits of 2015-19 batch students is given in Fig B. 2.2.4 (a).

Fig. B. 2.2.4 (a)PO attainment for Site visits 2015-19 batch

Invited talks and workshops by experts from industry were organized by the department, details of which are given in Table B. 2.2.4 (b).

| Sl | Industry Export   | Tonio  | Data      | Mapping             |      | Relevant  |
|----|---|--|-----------|---------------------|------|---|
| No | moustry Expert  | Торіс  | Date      | POs                 | PSOs | Course  |
| 1  | Er.Ravikumar, Chief Resident<br>Engineer, Dubai   | High Rise Construction,<br>Methodologies and Challenges<br>(Burj Khalifa)                      | 13.08.18  | 1,2,3,4,7,8,9,11,12 | 1    | Structural<br>Engineering                           |
| 2  | Mr.Sreekumar Head –<br>Corporate, B&F IC, L&T<br>Construction                                     | Precast Structures   | 22.03.18. | 1,2                 | 1    | Structural<br>Engineering                           |
| 3  | Dr.E.Sreedharan   | Excellence in Engineering<br>Profession  | 26.02.18  | 6                   | -    | -   |
| 4  | Dr. Ravi Karangat, IIT Guwahati   | Geo Energy Systems   | 24.01.18  | 1,2, 7              | 1    | Geotechnical<br>and<br>Environmental<br>Engineering |
| 5  | G.V.S Reddy, CEO<br>AdithyaProjects,Hyderabad   | Vaastu in Construction   | 09.02.18  | 1,2                 | 1    | Building<br>Technology                              |
| 6  | Er.B.Suresh, Sr Technical<br>Manager, Chettinad Cements.  | Precast Concrete   | 08.03.17  | 1,2,6, 11           | 1    | Structural<br>Engineering                           |
| 7  | Mr, Pradeep kumar,<br>Deputy chief<br>engineer/Planning/Construction,<br>Indian Railways, Chennai | Opportunities for Civil Engineers<br>(including IES) and role of Civil<br>Engineers in Railway | 11.03.17. | 6                   | -    | -   |
| 8  | Prof. Jayaraman K, CIR, Amrita<br>VishwaVidyapeetham.   | Instrumentation aspects of Structural<br>Health Monitoring in Structures                       | 27.02.17  | 1,2,5               | 1    | Structural<br>Engineering                           |

| Table B.2.2.4 ( | ( <b>b</b> ) | Details of | of Invited | Talks / | Workshop | s b | y Industry | v experts |
|-----------------|--------------|------------|------------|---------|----------|-----|------------|-----------|
|-----------------|--------------|------------|------------|---------|----------|-----|------------|-----------|

| 9  | Mr.GowrishankarRajaramanan,<br>Mr.S.Sriram, Mr.N.Karthik                         | LEED Education (Green Buildings)   | 25.01.17               | 1,3, 6,7      | 3 | Building<br>Technology        |
|----|--|--|------------------------|---------------|---|-------------------------------|
| 10 | Prof.T.G.Sitharam,<br>& Dr.K.Sreevalsa Amrita Team,<br>NITK , CIFT, Mr.Premkumar | International Workshop on Coastal<br>Reservoirs Research Project Review<br>meeting of Feasibility studies of<br>Coastal reservoir across Netravathi<br>River (BWSSB) | 19.07.17.              | 1,3, 7,9      | 1 | Water resource<br>Engineering |
| 11 | Mr.Dinesh Raja, BIM<br>Consultancy   | Faculty Development Programme<br>for Staffs , Building Information<br>Modeling (BIM)   | 16.08.17 -<br>18.08.17 | 5             | 1 | Structural<br>Engineering     |
| 12 | Dr.S.Kalirajan,L& T, Chief<br>Engineer, Chennai.                                 | Construction Management &<br>Practical issues  | 15.09.17               | 1,6,11        | 3 | Construction<br>Management    |
| 13 | Dr.S.Kalirajan,L& T, Chief<br>Engineer, Chennai.                                 | Prefabricated Structures   | 15.09.17               | 1,3, 7, 11    | 1 | Structural<br>Engineering     |
| 14 | Mr.G.ArumugaPerumal, Manager-<br>Technical ,RMC Ready<br>Mix(India) Chennai      | Special Concrete for better construction   | 05.08.16               | 1,3, 6, 7, 11 | 1 |                               |
| 15 | Mr. Roger Kessinger , CEO,<br>Kessinger Publishing, LLC                          | Technical knowledge transfer to<br>Villages – Live-in-Labs Case<br>Studies   | 10.08.16               | 1,6,7         | 3 | Live – in - Lab               |
| 16 | Er.Sudhakar,Chief Consultant -<br>Dimensions, Coimbatore                         | Sustainability   | 06.10.16               | 1,6, 7,       | 3 | Structural<br>Engineering     |

| 17 | Dr.SureshKumar,Senior Wind<br>Engineering Consultant &<br>Managing Director, RWDI<br>Consulting Engineers<br>(India)PvtLtd.(Multi-<br>NationalCompany),Trivandrum | Wind effects on structures   | 05.10.16    | 1, 2, 3     | 1 | Structural<br>Engineering |
|----|---|--|-------------|-------------|---|---------------------------|
| 18 | Mr.S.Sriram Green Buildings<br>(Chennai)  | Seminar on LEED Education (Green<br>Buildings)   | 27.10.16    | 1,3, 6,7    | 3 | Building<br>Technology    |
| 19 | Dr. SharadKelkar, Hydrologist,<br>Los Alamos National Laboratory  | Interaction session for faculty and students   | 09.06.2015  | 1           | 1 | -                         |
| 20 | Dr.Marty, University of Columbia  | Interaction with the faculty and students  | 05.10.2015  | 1           | 1 | -                         |
| 21 | Dr C Jayasree, Associate Research<br>Scientist, Kuwait Institute for<br>Scientific Research, Kuwait.  | Rheology of cement paste   | 11.08.2015  | 1,2,3       | 1 | Structural<br>Engineering |
| 22 | Er. A. Sudhahar, Chief Consultant,<br>Dimensions, Coimbatore  | Durability of concrete   | 06.08.2015. | 1,2,3,4,6,7 | 1 | Structural<br>Engineering |
| 23 | Dr.L.S.Jayagopal, Managing<br>Director –Mithran Structures-<br>Structural Consultant, Coimbatore.   | ayagopal, Managing<br>–Mithran Structures-<br>Il Consultant, Coimbatore.                           |             | 1,2,3       | 1 | Structural<br>Engineering |
| 24 | Col.Jacob G Podipara, Professor,<br>Coimbatore Institute of Technology  | Construction in Challenging terrain conditions   | 19.09.2015  | 1,2,3,4     | 1 | Structural<br>Engineering |
| 25 | Mr.Jayakrishnan Menon,<br>Geotechnical Consultant.  | Deep basement construction design<br>and planning from Structural and<br>Geo technical perspective | 10.09.2015  | 1,2,3,4     | 1 | Structural<br>Engineering |

Impact analysis of Invited talks are done based on feedbacks from students (collected using the format given in ANNEXURE B. 2.1). The PO attainment for 2015 - 19 batch students is given in Fig. B. 2.2.4 (b).



Fig. B. 2.2.4 (b) Percentage attainment of POs for invited talks (2015 -19 batch)

#### 2.2.5. Initiatives related to industry internship/summer training (10)

Students are encouraged to do internships in industries during the semester break, which are co-ordinated by the Corporate and Industrial Relationships (CIR) department of Amrita VishwaVidyapeetham and Department of Civil Engineering. The students who undergo training/internships are insisted to submit the report. The details of the student who had undergone internships/training for the different assessment years are provided in Table B. 2.2.5.

#### Department of Civil Engineering, Amrita School of Engineering, Coimbatore

| Table B.2.2.5 7 | The details | of the | student | internshi | ps/training |
|-----------------|-------------|--------|---------|-----------|-------------|
|-----------------|-------------|--------|---------|-----------|-------------|

| Sl<br>No | Register Number  | Name of the student | Semester | Name of the Industry                        | Duration                    |  |  |  |  |  |
|----------|------------------|---------------------|----------|---|-----------------------------|--|--|--|--|--|
|          | (2017-2018)      |                     |          |   |                             |  |  |  |  |  |
| 1        | CB.EN.U4CIE16025 | Landu Tejashwi      | IV       | NTR Teluguganga Project, Tirupathi          | May-18                      |  |  |  |  |  |
| 2        | CB.EN.U4CIE16061 | Aravinth .K         | IV       | Public Works Department, Nagercoil          | 07.05.18 to<br>13.05.18     |  |  |  |  |  |
| 3        | CB.EN.U4CIE16043 | Shankar.V           | IV       | NTECL Vallur Thermal Power Project, Chennai | 11.06.18 to<br>16.06.18.    |  |  |  |  |  |
| 4        | CB.EN.U4CIE16018 | Jagan .D            | IV       | NTECL Vallur Thermal Power Project, Chennai | 11.06.18 to<br>16.06.18.    |  |  |  |  |  |
| 5        | CB.EN.U4CIE15008 | Anand Siva p v      | IV       | N M Salim &assosiates,Calicut, Kerala       | 01/06/17 to<br>06/06/17     |  |  |  |  |  |
| 6        | CB.ENU4CIE15019  | Gokul J             | IV       | ULCCS LTD. , Kozhikode, Kerala              | 05/06/2017 to<br>10/06/2017 |  |  |  |  |  |
| 7        | CB.EN.U4CIE15063 | Vishnu Prasath S    | VI       | Renaatus Project Pvt Lmt, Erode.            | 05/05/2018 to<br>12/05/2018 |  |  |  |  |  |
| 8        | CB.EN.U4CIE15030 | Manoj Kumar M       | VI       | Renaatus Project Pvt Lmt, Erode             | 05/05/2018 to<br>12/05/2018 |  |  |  |  |  |
| 9        | CB.EN.U4CIE15025 | Karthikeyan V       | VI       | Renaatus Project Pvt Lmt, Erode             | 05/05/2018 to<br>12/05/2018 |  |  |  |  |  |
| 10       | CB.EN.U4CIE15048 | Sadaf Karim         | V        | Reliance Infrastructure, Pune               | 5/06/2017 to<br>15/06/2017  |  |  |  |  |  |
| 11       | CB.EN.U4CIE15048 | Sadaf Karim         | V        | L&T IDPL, Chennai                           | 26/11/2017 to 15/12/2017    |  |  |  |  |  |
| 12       | CB.EN.U4CIE15048 | Sadaf Karim         | VI       | L&T IDPL, Chennai                           | 15/05/2018 to<br>10/06/2018 |  |  |  |  |  |

| 13CB.EN.04CIE15001Abina visitation1VDatabling Construction, Manania, Databling23/06/201714CB.EN.04CIE15051SankaraPandiammal N LVL&T Transportation Infrastructure IC,<br>Kanyakumari29/11/2017 |
|--|
| 14CB.EN.U4CIE15051SankaraPandiammal N LVL&T Transportation Infrastructure IC,<br>Kanyakumari29/11/201713/12/2017   |
| Kanyakumari 13/12/2017   |
|  |
| 15 CB EN U4CIE15051 SankaraPandiammal N I VI Maruthi Constructions Salem 7/5/2018 to   |
| 15 CB.EIV.04CHE15051 Sankarar andrammar IV E VI Iviar dum Constructions, Salem 19/5/2018   |
| 16 CB EN U4CIE15010 Anisha S IV Unicore construction pythd chennai 2/5/2018 to   |
| $\frac{10}{20/5/2018}$   |
| 17 CB EN LIACIE 15005 Aichwarya Raghupath V Satis and Prabhakaran Civil and Architectural 1/12/2017 t  |
| 17 CB.EN.04CHE15003 AlshwaryaRaghunath V consultants, Calicut. 9/12/2017   |
| 18 CB EN U/CIE 15005 Aichwarva Paghunath VI Malabar Developers Calicut 7/5/2018 to   |
| 18 CB.EN.04CIE15005 AisiwaryaKagiunan VI Malabar Developers, Cancut. 19/5/2018   |
| 10 CR EN LIACIE 15024 S Kailash IV Bopular Foundations Part I td 5/06/2017 t   |
| 19 CB.EN.04CIE13024 S.Kanash IV Popular Foundations PVLLtd 15/06/2017  |
| 20 CD EN LIACIE 15024 S Keilesh VI M.Dharmalingam Associate, 2/05/2018 t   |
| 20 CB.EN.04CIE13024 S.Kanash VI Coimbatore 14/05/2018  |
| 21 CD EN LIACIE 15025 M Neveneeth IV View and Co. Competence 5/06/2017 t   |
| $\begin{bmatrix} 21 \\ CB.EN.04CIE15055 \end{bmatrix}$ Wi.Navaneetin $\begin{bmatrix} 1V \\ V \text{ iska and Co., Connoatore} \end{bmatrix}$ $21/06/2017$                                     |
| 22 CD EN LIACIE 15025 M Nevergeth VI M.Dharmalingam Associate, 2/05/2018 t   |
| 22 CB.EN.04CIE15055 MI.Navaneeth VI Coimbatore 14/05/2019  |
| 22 OD EN LIACIE 15055 Sharelatha D.K. N. Danlar Infrastructure Limited Finds 2/12/17 to  |
| 25 CB.EN.04CIE15055 Sharulatha P K V Ramky Intrastructure Limited, Erode 9/12/17   |
| 24 OD EN HACIE15501 NAK Chither NU Victore Stock Direct  |
| 24 CB.EN.04CIE15501 MIK Chithra VI Vishakapatham Steel Plant, 26/05/2018   |
| M.Mahender Reddy (Class - I Contractor), 02/06/2017  |
| 25 CB.EN.U4CIE15501 M K Chithra IV Hyderabad 12/06/2017  |
|  |
| 26     CB.EN.U4CIE1506/     M C Yuvankarthik     IV     The India Cements Limited, Sankari     25/06/2017  |
| 07/05/2018   |
| 27 CB.EN.U4CIE15006 Akshay R VI AFCONS Intrastructure Limited, New Delhi 22/05/2018  |

| 28 | CB.EN.U4CIE15023   | Jayasundar A       | IV        | The India Cements Limited, Sankari             | 19/06/17 to<br>25/06/17     |  |  |  |  |  |  |
|----|--------------------|--------------------|-----------|--|-----------------------------|--|--|--|--|--|--|
| 29 | CB.EN.U4CIE15045   | Rajashekar A       | IV        | The India Cements Limited, Sankari             | 07/06/17-                   |  |  |  |  |  |  |
| 30 | CB.EN.U4CIE15020   | Gowri Shankar V    | IV        | Uniqcore constructions                         | 17/00/17                    |  |  |  |  |  |  |
| 31 | CB.EN.U4CIE15031   | MeenakshiSundaram. | V         | Sairam shelters pvt Ltd                        | 31-11-17 to<br>6-12-17      |  |  |  |  |  |  |
| 32 | CB.EN.U4CIE15046   | RamjitNandakumar   | III       | Vfive homes private Ltd                        | 16-12-16<br>to23-12-16      |  |  |  |  |  |  |
| 33 | CB.EN.U4CIE15046   | RamjitNandakumar   | IV        | Cordon builders                                | 05-06-17<br>to14-06-17      |  |  |  |  |  |  |
| 34 | CB.EN.U4CIE15041   | Praveen Kumar G    | IV        | Chettinad Builders PVT LTD                     | 19.06.17 to<br>30.06.17     |  |  |  |  |  |  |
| 35 | CB.EN.U4CIE15041   | Praveen Kumar G    | V         | PWD, Thanjavur.                                | 02.05.18 to<br>17.05.18     |  |  |  |  |  |  |
| 36 | CB.EN.U4CIE15041   | Praveen Kumar G    | V         | PWD,Buildings(C&M) Division, Coimbatore-<br>01 | 23.05.18 to<br>1.06.18      |  |  |  |  |  |  |
| 37 | CB.EN.U4CIE15003   | Adarsh S Nair      | IV        | PWD(Highways), Itanagar, Arunachal Pradesh     | June 2018                   |  |  |  |  |  |  |
| 38 | CB.EN.U4CIE15044   | RahulRamesh        | v         | Atkins Oman                                    | 18.12.17 to<br>03.01.2018   |  |  |  |  |  |  |
| 39 | CB.EN.U4CIE15044   | RahulRamesh        | VI        | Al Hairy Construction And Contracting, Muscat  | 1.6.2018 to<br>4.7.2018     |  |  |  |  |  |  |
| 40 | CB.EN.U4CIE15015   | S. Barathikumar    | VI        | NLC, Neyveli                                   | 07.05.2018 to 19.05.2018    |  |  |  |  |  |  |
| 41 | CB. EN. U4CIE15038 | B V Pavithran      | V         | LCS City Makers Pvt Ltd, Chennai               | 08.06.2017 to<br>14.06.2017 |  |  |  |  |  |  |
|    |                    | I.                 | (2016- 20 | )17)   | 1                           |  |  |  |  |  |  |

| 1  | CB.EN.U4CIE14024 | J. John Jesuran                            | VI | TWAD Board, Tamil Nadu   | 28.06.17 –<br>01.07.17 |
|----|------------------|--|----|--|------------------------|
| 2  | CB.EN.U4CIE14056 | Suja.P                                     | VI | PRICOL Properties Ltd, Coimbatore                                | June-17                |
| 3  | CB.EN.U4CIE14009 | Aswathi G Krishnan                         | VI | PRICOL Properties Ltd, Coimbatore                                | Jun-17                 |
| 4  | CB.EN.U4CIE14060 | Varsha Nair                                | VI | PRICOL Properties Ltd, Coimbatore                                | Jun-17                 |
| 5  | CB.EN.U4CIE14063 | Tamil Arasi                                | VI | PRICOL Properties Ltd, Coimbatore                                | Jun-17                 |
| 6  | CB.EN.U4CIE14061 | Vinithan.K.S                               | VI | PRICOL Properties Ltd, Coimbatore                                | Jun-17                 |
| 7  | CB.EN.U4CIE15501 | M.K.Chithra                                | IV | Mr. M. Mahender Reddy, Special Class –I<br>Contractor, Hyderabad | Jun-17                 |
| 8  | CB.EN.U4CIE15065 | Viswajithkotha                             | IV | Mr. M. Mahender Reddy, Special Class –I<br>Contractor, Hyderabad | Jun-17                 |
| 9  | CB.EN.U4CIE14001 | Abhinash Kumar<br>Patchipulusu             | VI | Ramco Cements, Andra Pradesh                                     | Jun-17                 |
| 10 | CB.EN.U4CIE14011 | BhogadiJagath                              | VI | Ramco Cements, Andra Pradesh                                     | Jun-17                 |
| 11 | CB.EN.U4CIE14025 | Kangodian Sri Krishna<br>Chaitanya         | VI | Ramco Cements, Andra Pradesh                                     | Jun-17                 |
| 12 | CB.EN.U4CIE14030 | Kunapareddy Sri Dutta<br>Narasimha Aaseesh | VI | Ramco Cements, Andra Pradesh                                     | Jun-17                 |
| 13 | CB.EN.U4CIE14033 | Mohammed Salman<br>Khizar                  | VI | Ramco Cements, Andra Pradesh                                     | Jun-17                 |
| 14 | CB.EN.U4CIE14024 | J. John Jesuran                            | VI | PWD Department of Highway Engineering,<br>Thiruchirappalli       | 05.06.17 –<br>10.06.17 |
| 15 | CB.EN.U4CIE13043 | Nikil.S                                    | VI | TANGEDCO-Tunnelling Project Hydropower<br>station Ooty – Emerald | Jun-16                 |

| 16 | CB.EN.U4CIE13044 | NishokKumar.E        | VI | TANGEDCO-Tunnelling Project Hydropower<br>station Ooty – Emerald | Jun-16 |
|----|------------------|----------------------|----|--|--------|
| 17 | CB.EN.U4CIE13015 | DhanyaUnni           | VI | DUTCO – Road constructions & Improvement.                        | Jun-16 |
| 18 |                  | MeenakshiSreekumar   | VI | CIAL – Kochi   | Jun-16 |
| 19 | CB.EN.U4CIE13021 | Gopika A             | VI | CIAL – Kochi   | Jun-16 |
| 20 | CB.EN.U4CIE13011 | Azhar Aziz M B       | VI | CIAL – Kochi   | Jun-16 |
| 21 | CB.EN.U4CIE13067 | Swarnalakshmi K S    | VI | Petro -6 –Offshore structures                                    | Jun-16 |
| 22 | CB.EN.U4CIE13045 | Nivetha S            | VI | Petro -6 –Offshore structures                                    | Jun-16 |
| 23 | CB.EN.U4CIE13063 | Shiv Shankhar R      | VI | Petro -6 –Offshore structures                                    | Jun-16 |
| 24 | CB.EN.U4CIE13010 | AthiraSreekumar Nair | VI | Galfar – Constructions (MUSCAT)                                  | Jun-16 |
| 25 | CB.EN.U4CIE13002 | Adithya B            | VI | Elysium properties apartment constructions                       | Jun-16 |
| 26 | CB.EN.U4CIE13046 | Pradeep Gokul V      | VI | Elysium properties apartment constructions                       | Jun-16 |
| 27 | CB.EN.U4CIE13016 | Divya Prasad V       | VI | Elysium properties apartment constructions                       | Jun-16 |
| 28 | CB.EN.U4CIE13013 | OKC Bavithran        | VI | Elysium properties apartment constructions                       | Jun-16 |
| 29 | CB.EN.U4CIE13041 | MukeshKanna M        | VI | Elysium properties apartment constructions                       | Jun-16 |
| 30 | CB.EN.U4CIE13061 | Sanjaykirann C K     | VI | Elysium properties apartment constructions                       | Jun-16 |
| 31 | CB.EN.U4CIE13006 | Akshaya.A            | VI | Saint Gobain&Neyveli Lignite Corporation                         | Jun-16 |

| 32 | CB.EN.U4CIE13058 | Rohith.V.R.        | VI | Saint Gobain (Internship) Chennai campus.                      | Jun-16                 |
|----|------------------|--------------------|----|--|------------------------|
| 33 | CB.EN.U4CIE13002 | Adithya.B          | VI | SGS Associates, Coimbatore                                     | 03.06.16 –<br>11.06.16 |
| 34 | CB.EN.U4CIE13016 | Divya Prasad V     | VI | SGS Associates, Coimbatore                                     | 03.06.16 - 11.06.16    |
| 35 | CB.EN.U4CIE13013 | BavithranOkc       | VI | SGS Associates, Coimbatore                                     | 03.06.16 - 11.06.16    |
| 36 | CB.EN.U4CIE13041 | MukeshKanna M      | VI | SGS Associates, Coimbatore                                     | 03.06.16 - 11.06.16    |
| 37 | CB.EN.U4CIE13046 | Pradeep Gokul V    | VI | SGS Associates, Coimbatore                                     | 03.06.16 -             |
| 38 | CB.EN.U4CIE13061 | Sanjaykirann C K   | VI | SGS Associates, Coimbatore                                     | 03.06.16 -             |
| 39 | CB.EN.U4CIE13072 | Y.V.Vijaybabu      | VI | South Central Railways Vijayawada<br>Division, Andhra Pradesh. | Jun-16                 |
| 40 | CB.EN.U4CIE13034 | Madhavendra Kamath | VI | Cochin International Airport Ltd                               | 01.06.16 –<br>11.06.16 |
| 41 | CB.EN.U4CIE13038 | Megha Manoj        | VI | Cochin International Airport Ltd                               | 01.06.16 –<br>11.06.16 |
| 42 | CB.EN.U4CIE13021 | Gopikaavanoor      | VI | Cochin International Airport Ltd                               | 01.06.16 –<br>11.06.16 |
| 43 | CB.EN.U4CIE13011 | Azar Aziz          | VI | Cochin International Airport Ltd                               | 01.06.16 - 11.06.16    |
| 44 | CB.EN.U4CIE13037 | MeenakshiSreekumar | VI | Cochin International Airport Ltd                               | 01.06.16 -             |
| 45 | CB.EN.U4CIE13045 | S.Nivetha          | VI | Petro6 Engineering & Construction, Chennai                     | 13.06.16 - 20.06.16    |
| 46 | CB.EN.U4CIE13067 | K.S.Swarnalakshmi  | VI | Petro6 Engineering & Construction, Chennai                     | 13.06.16 - 20.06.16    |

| 47 | CD EN U/CIE12062  | Shiy Shankhar D        | VI        | Patros Engineering & Construction Channel | 13.06.16 -             |
|----|-------------------|------------------------|-----------|---|------------------------|
| 47 | CD.EIN.04CIE13003 | SIIIV SHAHKHALK        | V I       | Ferror Engineering & Construction Chennar | 20.06.16               |
| 48 | CB.EN.U4CIE13039  | Mitesh D Doshi         | VI        | Nadig Consulting (P) Ltd, Bangalore       | Jun-16                 |
| 49 | CB.EN.U4CIE13013  | BavithranOkc           | VI        | Nadig Consulting (P) Ltd, Bangalore       | Jun-16                 |
| 50 | CB.EN.U4CIE13059  | Saayinath N            | VI        | Nadig Consulting (P) Ltd, Bangalore       | Jun-16                 |
| 51 | CB.EN.U4CIE14003  | AmbrishAdithiya H      | VI        | Nadig Consulting (P) Ltd, Bangalore       | Jun-16                 |
| 52 | CB.EN.U4CIE13072  | Y.V.Vijaybabu          | VI        | Panchayat Raj Department, Andra Pradesh   | Jun-16                 |
| 53 | CB.EN.U4CIE14003  | AmbrishAdithiya.H      | VI        | L&T Constructions, Chennai                | 15.06.16 -<br>25.06.16 |
|    |                   |                        | (2015- 20 | 16)                                       |                        |
| 1. | CB.EN.U4CIE13065  | Subash Chandra Sekar N | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 2. | CB.EN.U4CIE13069  | Ushanth Dev K          | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 3  | CB.EN.U4CIE13046  | Pradeep Gokul V        | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 4  | CB.EN.U4CIE13047  | Prasanth M             | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 5  | CB.EN.U4CIE13031  | Karthikeyan G          | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 6. | CB.EN.U4CIE13023  | Gowthaman L R          | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 7  | CB.EN.U4CIE13024  | Haridev G V            | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 8. | CB.EN.U4CIE13055  | Ravichandran D         | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |
| 9. | CB.EN.U4CIE13044  | Nishok Kumar E         | IV        | Sreevatsa Real Estates (P) Ltd- Cbe       | Jun-15                 |

| 10. | CB.EN.U4CIE13053 | Rahul S S            | IV  | Sreevatsa Real Estates (P) Ltd- Cbe                                 | Jun-15                 |
|-----|------------------|----------------------|-----|---|------------------------|
| 11. | CB.EN.U4CIE13008 | AravindSiddaarth B S | IV  | Sreevatsa Real Estates (P) Ltd- Cbe                                 | Jun-15                 |
| 12. | CB.EN.U4CIE13035 | Manasa K             | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 13. | CB.EN.U4CIE13052 | Priyanka E           | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 14. | CB.EN.U4CIE13057 | Rizfana K            | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 15. | CB.EN.U4CIE13033 | Keerthana G          | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 16  | CB.EN.U4CIE13071 | VijayshreeSadasivan  | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 17  | CB.EN.U4CIE13025 | Hitha S              | IV  | SreeDaksha Property -Coimbatore                                     | Jun-15                 |
| 18  | CB.EN.U4CIE12053 | ThanuSuthan P M      | VI  | ACC Ltd, Coimbatore   | Jun-15                 |
| 19  | CB.EN.U4CIE12048 | Shudhirnath V G      | VI  | ACC Ltd, Coimbatore   | Jun-15                 |
| 20. | CB.EN.U4CIE12034 | Pagalavan M          | VI  | ACC Ltd, Coimbatore   | Jun-15                 |
| 21. | CB.EN.U4CIE12017 | Hakesh P V           | VI  | Kavin Engineering and Services Private Ltd -<br>Coimbatore          | Jun-15                 |
| 22. | CB.EN.U4CIE12046 | Satish A J           | VI  | Kavin Engineering and Services Private Ltd -<br>Coimbatore          | Jun-15                 |
| 23  | CB.EN.U4CIE12005 | AnaghaRamadas        | VI  | Sreevatsa Real Estates (P) Ltd- Coimbatore                          | Jun-15                 |
| 24. | CB.EN.U4CIE12028 | Kosika S M           | VI  | Sreevatsa Real Estates (P) Ltd- Coimbatore                          | Jun-15                 |
| 25  | CB.EN.U4CIE14004 | AnaghaMurali         | III | Kerala Agro Machinery Corporation Limited,<br>ErnakulamDist, Kerala | 15.12.15 –<br>17.12.15 |
| 26. | CB.EN.U4CIE14009 | Aswathy G Krishnan   | III | Kerala Agro Machinery Corporation Limited,<br>ErnakulamDist, Kerala | 15.12.15 –<br>17.12.15 |

| 27  | CB.EN.U4CIE14056 | Suja P              | III | Kerala Agro Machinery Corporation Limited,<br>ErnakulamDist, Kerala  | 15.12.15 –<br>17.12.15  |
|-----|------------------|---------------------|-----|--|-------------------------|
| 28  | CB.EN.U4CIE14058 | Swetha Krishna      | III | Kerala Agro Machinery Corporation Limited,<br>ErnakulamDist, Kerala  | 15.12.15 –<br>17.12.15  |
| 29  | CB.EN.U4CIE13011 | Azhar Aziz M.B      | V   | L&T Constructions, Project Site, Annur                               | 26.12.15 to 31.12.15    |
| 30. | CB.EN.U4CIE13058 | V.Rohith            | V   | L&T Constructions, Project Site, Annur                               | 26.12.15 to<br>31.12.15 |
| 31  | CB.EN.U4CIE13013 | Bavithran OKC       | V   | L&T Constructions, Project Site, Annur                               | 26.12.15 to<br>31.12.15 |
| 32  | CB.EN.U4CIE14044 | Raghavapriya.S.M    | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |
| 33. | CB.EN.U4CIE14054 | Sneha.S             | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |
| 34  | CB.EN.U4CIE14040 | Prabha.B            | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |
| 35  | CB.EN.U4CIE14059 | Thiviya S K         | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 - 11.12.15     |
| 36  | CB.EN.U4CIE14032 | Meganth Krishna S   | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 - 11.12.15     |
| 37. | CB.EN.U4CIE14020 | Gowri A C           | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 - 11.12.15     |
| 38  | CB.EN.U4CIE14008 | Aswath Maharaja K M | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |
| 39  | CB.EN.U4CIE14006 | ArunVenkatesh T     | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |
| 40  | CB.EN.U4CIE14010 | Balaji C S          | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 - 11.12.15     |
| 41  | CB.EN.U4CIE14031 | Manikandan M        | III | Tamil Nadu Newsprint Paper Ltd (Cement),<br>Kagithapuram, Karur (Dt) | 09.12.15 –<br>11.12.15  |

| 40 |                  | Constituent C       |     | Tamil Nadu Newsprint Paper Ltd (Cement),                                  | 09.12.15 - |
|----|------------------|---------------------|-----|---|------------|
| 42 | CB.EN.U4CIE14018 | Goutnam G           | 111 | Kagithapuram, Karur (Dt)  | 11.12.15   |
| 43 | CB.EN.U4CIE13045 | Nivetha.S           | IV  | Divisional Engineer, Highway Department,<br>Trichy                        | Jun-15     |
| 44 | CB.EN.U4CIE13067 | Swarna Lakshmi. K.S | IV  | Divisional Engineer, Highway Department,<br>Trichy                        | Jun-15     |
| 45 | CB.EN.U4CIE13019 | Geetha M            | IV  | Divisional Engineer, Highway Department,<br>Trichy                        | Jun-15     |
| 46 | CB.EN.U4CIE13043 | Nikil S             | IV  | L&T Constructions-PT&D IC,400 KV, M/C<br>Karamadai TL Project Site, Annur | Jun-15     |
| 47 | CB.EN.U4CIE13016 | Divya Prasad V      | IV  | L&T Constructions-PT&D IC,400 KV, M/C<br>Karamadai TL Project Site, Annur | Jun-15     |
| 48 | CB.EN.U4CIE13041 | MukeshKanna M       | IV  | L&T Constructions-PT&D IC,400 KV, M/C<br>Karamadai TL Project Site, Annur | Jun-15     |
| 49 | CB.EN.U4CIE13063 | Shiv Shankhar R     | IV  | L&T Constructions-PT&D IC,400 KV, M/C<br>Karamadai TL Project Site, Annur | Jun-15     |
| 50 | CB.EN.U4CIE13072 | Y.V.Vijaybabu       | IV  | Southern Railway, Vijayawada Division                                     | Jun-15     |
| 51 | CB.EN.U4CIE13002 | Adithya. B          | IV  | Foundation One, Coimbatore  | Jun-15     |
| 52 | CB.EN.U4CIE13028 | Kaarthik Krishna    | IV  | Foundation One, Coimbatore  | Jun-15     |
| 53 | CB.EN.U4CIE14007 | Arvindkannan. E.    | II  | ACC Cement Works, Coimbatore  | Jun-15     |
| 54 | CB.EN.U4CIE13054 | Rankarajan B        | IV  | Chennai Port Trust  | Jun-15     |
| 55 | CB.EN.U4CIE13001 | Abishek M           | IV  | Chennai Port Trust  | Jun-15     |
| 56 | CB.EN.U4CIE13009 | ArunSomasundaram SP | IV  | Chennai Port Trust  | Jun-15     |
| 56 | CB.EN.U4CIE13042 | Nandhagopal A R     | IV  | Port Trust, Tuticorin   | Jun-15     |

| 58 | CB.EN.U4CIE13068 | TirukkovaluriSnehasree | IV | Port Trust, Tuticorin  | Jun-15 |
|----|------------------|------------------------|----|--|--------|
| 59 | CB.EN.U4CIE13039 | Mitesh D Doshi         | IV | Port Trust, Tuticorin  | Jun-15 |
| 60 | CB.EN.U4CIE13027 | J.V.Seetharam          | IV | Hyderabad Metro Rail Limited   | Jun-15 |
| 61 | CB.EN.U4CIE13004 | Y.Akhil Reddy          | IV | Hyderabad Metro Rail Limited   | Jun-15 |
| 62 | CB.EN.U4CIE13005 | Akshay C V Reddy       | IV | Hyderabad Metro Rail Limited   | Jun-15 |
| 63 | CB.EN.U4CIE13040 | Monikasri.K            | IV | Highways Research Centre, Guindy, Chennai.                                       | Jun-15 |
| 64 | CB.EN.U4CIE13015 | DhanyaUnni             | IV | Highways Research Centre, Guindy, Chennai.                                       | Jun-15 |
| 65 | CB.EN.U4CIE13012 | B.Bharath Kumar        | IV | Satish Dhawan Space Centre, Srihari Kota,<br>Andra Pradesh                       | Jun-15 |
| 66 | CB.EN.U4CIE13032 | K.Priyatham            | IV | Satish Dhawan Space Centre, Srihari Kota,<br>Andra Pradesh                       | Jun-15 |
| 67 | CB.EN.U4CIE13029 | V.Karan Kumar          | IV | Satish Dhawan Space Centre, Srihari Kota,<br>Andra Pradesh                       | Jun-15 |
| 68 | CB.EN.U4CIE13020 | G.Shiridi Rao          | IV | Satish Dhawan Space Centre, Srihari Kota,<br>Andra Pradesh                       | Jun-15 |
| 69 | CB.EN.U4CIE13026 | J.Sharan Reddy         | IV | Satish Dhawan Space Centre, Srihari Kota,<br>Andra Pradesh                       | Jun-15 |
| 70 | CB.EN.U4CIE13022 | Gowtham.R              | IV | KNR Constructions Limited, Coimbatore  | Jun-15 |
| 71 | CB.EN.U4CIE13038 | Megha T Manoj          | IV | The ULCCS Ltd, Real Estate Builders &<br>Construction Company, Kozhikode, Kerala | Jun-15 |
| 72 | CB.EN.U4CIE13037 | Meenakshi Sreekumar    | IV | The ULCCS Ltd, Real Estate Builders &<br>Construction Company, Kozhikode, Kerala | Jun-15 |
| 73 | CB.EN.U4CIE13021 | GopikaAvanoor          | IV | The ULCCS Ltd, Real Estate Builders &<br>Construction Company, Kozhikode, Kerala | Jun-15 |

| 74 | CB.EN.U4CIE13043 | Nikil S               | IV | L&T Constructions-PT&D IC          | Jun-15 |
|----|------------------|-----------------------|----|------------------------------------|--------|
| 75 | CB.EN.U4CIE13006 | Akshaya A             | IV | BHEL, Trichy                       | Jun-15 |
| 76 | CB.EN.U4CIE13018 | Elavarasi Era SU      | IV | BHEL, Trichy                       | Jun-15 |
| 77 | CB.EN.U4CIE13030 | Karthic S             | IV | BHEL, Trichy                       | Jun-15 |
| 78 | CB.EN.U4CIE13061 | Sanjaykirann C K      | IV | BHEL, Trichy                       | Jun-15 |
| 79 | CB.EN.U4CIE13064 | Sowmya.S              | IV | Saipem India Projects Ltd, Chennai | Jun-15 |
| 80 | CB.EN.U4CIE13070 | Mr.Venkatachalam. R   | IV | WSP Consultan, WTC, Bangalore      | Jun-15 |
| 81 | CB.EN.U4CIE13049 | Praveen k             | IV | Neyveli New Themal Power Station   | Jun-15 |
| 82 | CB.EN.U4CIE13048 | PrathikAnand Krishnan | IV | NCL , Madhya Pradesh               | Jun-15 |

Impact analysis of Internships are done based on feedbacks from students (collected using the format given in ANNEXURE B. 2.1). The PO attainment for 2015 - 19 batch students for internships are given in Fig. B. 2.2.5.



Fig. B. 2.2.5 Percentage attainment of POs for internships (2015 -19 batch)

| <b>CRITERION 3</b> | <b>Course Outcomes and Program Outcomes</b> | 175 |
|--------------------|---|-----|

## 3.1. Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes

|        | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | <b>PO7</b> | PO8 | PO9 | <b>PO10</b> | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|--------|-----|-----|-----|-----|-----|-----|------------|-----|-----|-------------|------|------|------|------|------|
| ENG111 | -   | -   | -   | -   | -   | -   | -          | 2   | 2   | 3           | -    | 2    | -    | -    | -    |
| MAT111 | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| EEE100 | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| CUL101 | -   | -   | -   | -   | -   | 2   | 3          | 3   | 2   | 3           | 2    | 2    | -    | -    | -    |
| MEC181 | 3   | 3   | 3   | 2   | -   | 2   | -          | -   | -   | 3           | -    | 3    | -    | -    | -    |
| PHY100 | 3   | 3   | -   | -   | -   | -   | -          | -   | -   | -           | -    | 1    | -    | -    | -    |
| PHY181 | 2   | 2   | 2   | 2   | 2   | 1   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| CSE100 | 1   | 2   | 2   | -   | -   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| CSE180 | 1   | 2   | 2   | -   | 1   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| MEC180 | 2   | 2   | 1   | -   | 1   | -   | -          | -   | 2   | 1           | -    | 1    | -    | -    | -    |
| CHY181 | 3   | 3   | 1   | -   | -   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| CHY100 | 3   | 3   | 2   | 1   | -   | -   | -          | -   | -   | -           | -    | -    | -    | -    | -    |
| CUL102 | -   | -   | -   | -   | -   | 2   | 3          | 3   | 2   | 3           | 2    | 2    | -    | -    | -    |
| ECE100 | 2   | 3   | 2   | -   | -   | -   | -          | -   | -   | -           | -    | 1    | -    | -    | -    |

 Table B.3.1 (a) Program Articulation Matrix (2014-2018 Batch)

| EEE180  | 3 | 2 | 2 | - | - | - | - | - | 3 | - | - | 1 | - | - | - |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ENG112  | - | - | - | 1 | - | - | - | - | 3 | 3 | - | - | - | - | - |
| MAT112  | 3 | 2 | 1 | - | - | - | - | - | - | - | - | 1 | - | - | - |
| `MEC100 | 3 | 3 | 3 | 2 | - | - | - | - | - | - | - | 1 | - | - | - |
| MEC182  | 3 | 3 | 3 | 2 | 2 | 2 | - | - | - | 3 | - | 3 | - | - | - |
| MAT 211 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | - | - |
| CVL 200 | 2 | 2 | 1 | - | - | 1 | - | 1 | - | - | - | - | 2 | - | - |
| CVL 201 | 3 | 3 | 1 | - | 1 | 1 | 1 | - | 1 | - | - | - | 3 | - | - |
| CVL 210 | 3 | 3 | 2 | - | 2 | - | - | - | - | - | - | 2 | 3 | - | - |
| CVL 211 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 220 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 291 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | - | 3 | - | - |
| CVL 293 | 2 | 1 | - | - | - | - | - | - | 3 | 3 | - | 2 | 3 | - | - |
| ENG 251 | - | - | - | - | - | 2 | - | - | 2 | 3 | 1 | 2 | - | - | - |
| HUM 250 | - | - | - | - | - | 3 | - | 3 | 3 | 2 | 2 | 2 | - | - | - |
| HUM 256 | - | - | - | - | - | 3 | 3 | 2 | 3 | 2 | 1 | 2 | - | - | - |
| HUM 258 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 3 | - | - | - |
| CVL 212 | 3 | 3 | 1 | 1 | - | - | - | - | 1 | 1 | - | 1 | 3 | - | - |
| CVL 213 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CVL 221 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | 3 | - | - |
| CVL 230 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 3 | - | - |

| CVL 290 | 1 | - | - | 3 | - | - | - | - | 3 | 3 | - | 1 | 1 | 1 | 1 |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVL 292 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | - |
| MAT 212 | 3 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - |
| HUM 252 | - | - | - | - | - | 3 | - | 3 | 3 | 2 | 2 | 2 | - | - | - |
| HUM 257 | - | - | - | - | - | 2 | 3 | 3 | 2 | 3 | 2 | 1 | - | - | - |
| HUM 259 | - | 1 | 1 | - | - | 1 | 1 | 1 | 1 | 1 | 1 | 3 | - | - | - |
| SSK 111 | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |
| CVL 314 | 2 | 3 | - | - | 3 | 3 | - | - | - | - | - | 1 | 3 | - | - |
| CVL 315 | 3 | 3 | 3 | - | 2 | - | - | - | 2 | 1 | - | 2 | 3 | - | - |
| CVL 331 | 3 | 3 | 2 | 1 | - | 1 | - | 1 | - | - | - | - | 3 | - | - |
| CVL 332 | 3 | 2 | 2 | - | - | 1 | - | - | - | - | - | 1 | 3 | - | - |
| ENV200  | 1 | 1 | 1 | 1 | - | 2 | 3 | 3 | 1 | 2 | - | 1 | 1 | 1 | 1 |
| CVL 391 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | 1 |
| CVL 393 | 1 | - | 2 | 2 | 3 | 3 | 1 | - | 2 | 3 | 3 | 2 | 1 | 3 | 1 |
| SSK112  | - | 3 | - | 3 | - | - | - | - | 3 | 3 | 2 | 3 | - | - | - |
| HIN100  | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| MAL100  | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| TAM100  | - | - | - | - | - | - | - | - | 2 | 2 | - | - | - | - | - |
| CVL 322 | 3 | 2 | 3 | 1 | 1 | - | 1 | - | 1 | 1 | 1 | - | - | - | - |
| CVL 316 | 3 | 2 | 2 | 1 | 1 | - | - | - | 1 | 1 | - | - | 3 | 2 | - |
| CVL 323 | 3 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | 1 | 1 | - |

| CVL 333 | 3 | 2 | 1 | 1 | 1 | 1 | 1 | - | 1 | - | - | - | 3 | - | - |
|---------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| CVL 390 | 3 | 2 | 2 | 3 | 3 | 2 | - | - | 3 | 3 | 3 | - | 3 | 3 | 1 |
| CVL 392 | 3 | 3 | - | 3 | - | - | - | - | 3 | 3 | - | 3 | 3 | 1 | - |
| PHY271  | 3 | 3 | 2 | 1 | - | - | - | - | - | - | - | 1 | - | - | - |
| SSK113  | - | 3 | - | 2 | - | - | - | 2 | 3 | 3 | - | 3 | - | - | - |
| CVL453  | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | 3 | - |
| CVL464  | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 2 | 2 | - |
| CVL455  | 3 | 3 | 2 | 2 | 3 | - | 2 | - | - | 1 | - | - | 3 | 3 | 2 |
| CVL471  | 3 | 3 | - | 2 | 1 | 1 | - | - | 2 | 1 | - | 1 | 3 | - | - |
| CVL474  | 3 | 2 | - | - | - | - | 2 | - | - | - | - | 2 | 3 | - | - |
| CVL 491 | 1 | - | - | 2 | - | - | - | - | 3 | 3 | - | - | 2 | - | - |
| CVL 493 | 3 | 3 | - | 2 | 2 | 3 | - | 3 | 3 | 2 | 3 | 3 | 3 | 3 | 1 |
| CVL 497 | - | 3 | - | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 2 | - | - | 2 |
| MNG400  | 2 | 2 | 2 | 2 | 2 | 3 | 2 | 3 | 3 | 2 | 2 | 3 | 2 | 2 | 2 |
| CHY259  | 1 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | - |
| CVL 480 | 3 | 3 | 3 | - | 2 | - | - | 2 | - | - | 2 | 1 | - | - | 3 |
| CVL 458 | 3 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | 3 |
| CVL 462 | 3 | 3 | 3 | 3 | - | - | - | - | - | - | - | - | - | 3 | - |
| CVL 499 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 2 | 2 |
| CSE 479 | 2 | 2 | 2 | - | - | - | - | 2 | - | - | - | - | 1 | - | 2 |

**Table B.3.1 (b)** Course Articulation Matrix (2014-2018 Batch)

| РО       | Statement   |     | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       | Sutchieft   | 101 | 102 | 100 | 101 | 100 | 100 | 10/ | 100 | 107 | 1010 | 1011 | 1012 | 1501 | 1002 | 1500 |
| MEC100.1 | Determine rectangular components of a force   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |
| MEC100.2 | Obtain the equivalent force - couple system of a given system   | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |
| MEC100.3 | Analyze the equilibrium state of a particle and rigid body  | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |
| MEC100.4 | Estimate the moment of inertia of<br>composite area about centroidal or any<br>arbitrary axis   | 3   | 3   | 2   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |
| MEC100.5 | Determine the velocity and<br>acceleration of a particle in rectangular<br>and cylindrical coordinate systems and<br>angular velocity of rigid bodies in<br>general plane motion. | 3   | 3   | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |
|          | MEC100  |     |     | 3   | 2   | -   | -   | -   | -   | -   | -    | -    | 1    | -    | -    | -    |

# MEC100 Engineering Mechanics

### **CVL220 Fluid Mechanics**

| РО       | Statement                               | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       |   |     |     |     |     |     |     | -   |     |     |      |      |      |      |      |      |
| CVL220.1 | Discuss the fundamentals of fluid       | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|          | mechanics and estimate its properties,  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | measurements and behavior under         |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | various flow conditions.                |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL220.2 | Analyze the hydrostatic forces,         |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | conditions of buoyancy and stability of | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|          | various floating bodies.                |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL220.3 | Apply mass, momentum and energy         |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | equations in the measurement of fluid   | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|          | flow.                                   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL220.4 | Solve pipe network problems by          | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|          | considering major and minor losses.     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL220.5 | Calculate laminar flow characteristics  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | and boundary layer analysis using       | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|          | various methods.                        |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL220   |   | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |

**CVL213 Building Technology** 

| РО       | Statement   | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       | 1   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL213.1 | Suggest suitable type of foundation for given building and soil type. | 3   | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | 3    |
| CVL213.2 | Apply knowledge of construction                                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | techniques and procedures to acquire                                  | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | 3    |
|          | execution proficiency.  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL213.3 | Apply engineering knowledge to select                                 |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | suitable structural systems and services                              | 3   | 1   | 1   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | 3    |
|          | for tall buildings.   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL213.4 | Apply functional planning principles to                               |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | analyze and evaluate residential                                      | 3   | 2   | 1   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | 3    |
|          | building plans.   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL213   |   | 3   | 2   | 1   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | 3    |
## **CVL230-Soil Mechanics**

| РО         | Statement                               | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | POS | POQ | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|------------|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО         | Statement                               | 101 | 102 | 105 | 104 | 105 | 100 | 10/ | 100 | 10) | 1010 | 1011 | 1012 | 1501 | 1502 | 1505 |
|            | Ability to characterize and classify    |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVI 220 1  | soils with reference to their           | 2   | 2   |     |     |     |     |     |     |     |      |      |      | 2    |      |      |
| CVL250.1   | characteristics and to evaluate their   | 3   | 5   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 5    | -    | -    |
|            | index and engineering properties.       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVII 220 2 | Analyse and evaluate permeability       | 2   | 2   |     |     |     |     |     |     |     |      |      |      | 2    |      |      |
| CVL250.2   | characteristics of soils                | 3   | 5   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 5    | -    | -    |
|            | Ability to apply effective stress       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVII 220 2 | principles, estimate seepage through    | 2   | 2   |     |     |     |     |     |     |     |      |      |      | 2    |      |      |
| CVL230.3   | soils and determine stress distribution | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|            | within a soil mass.                     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to evaluate compaction          |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVII 220 4 | characteristics and interpret field     | 2   | 2   |     |     |     |     |     |     |     |      |      |      | 2    |      |      |
| CVL250.4   | compaction results with respect to      | 3   | 5   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 5    | -    | -    |
|            | compaction specifications.              |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to evaluate consolidation       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | properties of soils and apply those     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL230.5   | properties to settlement problems       | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
|            | frequently encountered in civil         |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | engineering.                            |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to apply engineering science    |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVI 220.6  | principles, using shear strength        | 2   | 2   |     |     |     |     |     |     |     |      |      |      | 3    |      |      |
| C VL230.0  | parameters, to analyse the response of  | 5   | 5   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 5    | -    | -    |
|            | soil under external loading             |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | CVL230                                  | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |

CVL314 Advanced Structural Analysis

| РО       | Statement  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| со       |  | 101 | 102 | 100 | 101 | 100 | 100 | 107 | 100 | 105 | 1010 | 1011 | 1012 | 1501 | 1502 | 1500 |
| CVL314.1 | Analyze continuous beam and frame<br>using displacement method of analysis | 2   | 3   | -   | -   | -   | 3   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL314.2 | Analyze continuous beam and frame<br>using force method of analysis        | 2   | 3   | -   | -   | -   | 3   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL314.3 | Analyze the multistorey frames using approximate methods.                  | 2   | 3   | -   | -   | -   | 3   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL314.4 | Analyze beam, frame and truss using matrix method                          | 2   | 3   | -   | -   | 3   | 3   | -   | -   | -   | -    | -    | 1    | 3    | -    | -    |
|          | CVL314   | 2   | 3   | -   | -   | 3   | 3   | -   | -   | -   | -    | -    | 1    | 3    | -    | -    |

CVL316 Design of Steel Structures

| РО       | Statement  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       |  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL316.1 | Able to design the connections<br>considering load combinations and<br>deflection limitations.               | 3   | 1   | 2   | 1   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 1    | -    |
| CVL316.2 | Will be able to identify and design the suitable ties for tension members                                    | 3   | 2   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 1    | -    |
| CVL316.3 | Analyze the plastic behaviour of<br>structural steel and design of beams and<br>portal frames                | 3   | 2   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL316.4 | Able to design a compression and built<br>up members incorporating flexure, shear<br>deflection and bearing. | 3   | 2   | 2   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 3    | 1    | -    |
| CVL316.5 | Analyze and develop report for design of structural steel roof sections.                                     | 2   | 2   | 2   | -   | 1   | -   | -   | -   | 1   | 1    | -    | -    | 3    | 2    | -    |
|          | CVL316   | 3   | 2   | 2   | 1   | 1   | -   | -   | -   | 1   | 1    | -    | -    | 3    | 2    | -    |

CVL333 Transportation Engineering II

| РО       | Statement  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | P07 | POS | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       | Statement  | 101 | 102 | 105 | 104 | 105 | 100 | 10/ | 100 | 107 | 1010 | rom  | 1012 | 1501 | 1502 | 1505 |
| CVL333.1 | Analyze and evaluate necessary<br>features for traffic regulation and<br>control | 3   | 1   | 1   | -   | -   | 1   | -   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL333.2 | Plan transportation system using a 4-<br>stage travel demand modeling            | 3   | 2   | -   | 1   | 1   | -   | 1   | -   | -   | -    | -    | -    | 3    | -    | -    |
| CVL333.3 | Design and evaluate various railway components                                   | 3   | 2   | 1   | -   | -   | -   | -   | -   | 1   | -    | -    | -    | 3    | -    | -    |
| CVL333.4 | Analyze the operational and design aspects of harbors and docks                  | 3   | -   | -   | -   | -   | -   | -   | -   | 1   | -    | -    | -    | 3    | -    | -    |
|          | CVL333   | 3   | 2   | 1   | 1   | 1   | 1   | 1   | -   | 1   | -    | -    | -    | 3    | -    | -    |

CVL464 Advanced Environmental Engineering

| РО       | Statement  | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       |  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL464.1 | Analyze and estimate the air pollutants                      | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | -    | -    |
| CVL464.2 | Analyze the meteorology for the dispersion of air pollutants | 3   | 3   | 3   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | -    | -    |
| CVL464.3 | Analyze and design the control measures for air pollutants.  | 3   | 3   | 3   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    | -    |
| CVL464.4 | Analyze and design of advanced water treatment systems       | 3   | 3   | 3   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    | -    |
| CVL464.5 | Analyze and design of advanced waste water treatment systems | 2   | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    | -    |
|          | CVL464   | 3   | 3   | 3   | -   | -   | -   | -   | -   | -   | -    | -    | -    | 2    | 2    | -    |

CVL462 Water Resource System Planning & Design

| РО       | Statement                              | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| СО       |  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | To understand the water resources      |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL462.1 | systems and express it using           | 3   | 3   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | -    |
|          | mathematical models.                   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | To formulate and solve various         |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL462.2 | optimization models of water resources | 3   | 2   | -   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | 3    | -    |
|          | planning and management problems.      |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | To understand the advantages and       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | limitations of various types of        |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL462.3 | modeling methods and algorithms used   | 2   | -   | 3   | -   | -   | -   | -   | -   | -   | -    | -    | -    | -    | -    | -    |
|          | in water resources planning and        |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | management.                            |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | To use the simulation and optimization |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL462.4 | models for planning and management     | 3   | 3   | 2   | 3   | -   | -   | -   | -   | -   | -    | -    | -    | -    | 3    | -    |
|          | decision making.                       |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|          | CVL462                                 | 3   | 3   | 3   | 3   | -   | -   | -   | -   | -   | -    | -    | -    | -    | 3    | -    |

# CVL 499 Project

| РО         | Statement                                | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|------------|--|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| CO         |  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Capability to understand the problem     |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVI 400 1  | and develop/design the solution(s) by    | 3   | 3   | 3   | 3   | 3   |     |     |     |     |      |      |      | 3    | 2    | 1    |
| C V L499.1 | applying the engineering concepts in an  | 5   | 5   | 5   | 5   | 5   | -   | -   | -   | -   | -    | -    | -    | 5    | 2    | 1    |
|            | identified project work.                 |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to effectively plan, work and    |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | manage the time bound tasks by           |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVII 400 2 | applying the knowledge and               |     |     |     |     |     |     |     |     |     |      | 2    |      | 1    | 1    | 2    |
| CVL499.2   | understanding of engineering and         | -   | -   | -   | -   | -   | -   | -   |     | -   | -    | 3    | -    | 1    | 1    | 3    |
|            | management principles as a responsible   |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | individual.                              |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to maintain professional ethics  |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVI 400 2  | and further communicate the findings     |     |     |     |     |     |     |     | 2   | 2   | 2    |      |      |      | 2    | 1    |
| CVL499.3   | amongst their team and to the review     | -   | -   | -   | -   | -   | -   | -   | 3   | 3   | 3    | -    | -    | -    | 2    | 1    |
|            | committee.                               |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Ability to work effectively as a team    |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVI 400 4  | member as well as individual and be      |     |     |     |     |     |     |     |     | 2   |      |      |      |      |      | 1    |
| C V L499.4 | able to lead the team when the situation | -   | -   | -   | -   | -   | -   | -   | -   | 5   | -    | -    | -    | -    | -    | 1    |
|            | warrants.                                |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | Capability to use their engineering      |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | skills for the betterment of society and |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
| CVL499.5   | to engage themselves in life-long        | -   | -   | -   | -   | -   | 3   | 3   | -   | -   | -    | -    | 3    | 2    | 1    | 1    |
|            | learning in the perspective of           |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | technological advancements.              |     |     |     |     |     |     |     |     |     |      |      |      |      |      |      |
|            | CVL499                                   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 2    | 2    | 2    |

• Course Articulation Matrix for all the courses is available in Department

Department of Civil Engineering, Amrita School of Engineering, Coimbatore

#### 3.2. Attainment of Course Outcomes

# **3.2.1.** Describe the assessment tool and process used to gather the data upon which the evaluation of Course Outcome is based

The CO attainment is computed at Amrita School of Engineering, Coimbatore using the **Inpods Software**. The following procedure is followed to do the computation.

| Step 1:      | Faculty sets the assessment question paper with CO mapping. BTL mapping  |
|--------------|--|
| ~~~ <b>r</b> |  |
|              | and Marks for each question.   |
| Step 2:      | Faculty enters the step 1 data in Inpods software and the bundle number is   |
|              | generated.   |
|              | Den 11. New Low is the endingeneration (Constant in the thick of the endingeneration of the second s |
|              | Bundle Number is the unique number (Spread sheet) for an exam for a  |
|              | particular course for a particular class.  |
| Step 3:      | The answer paper is evaluated by the faculty and is shared with the students   |
|              | for verification.  |
|              |  |
| Step 4:      | The front sheet of the answer paper which contains the question wise mark is   |
|              | torn and collected back by the faculty.  |
| Step 5:      | Faculty sends those front sheet along with bundle number generated in step 2   |
|              | to the data entry team   |
|              |  |
| Step 6:      | Data entry team enters the marks of each student, question wise, in the  |
|              | Inpods software with the help of bundle number (spread sheet).   |
| Step 7:      | The entry will be done by the faculty for assignment and quiz in inpods.   |
|              |  |
| Step 8:      | Step 1 to Step 6 will be followed for Periodicals 1, Periodicals 2 and End   |
|              | Semester.  |
| Sten 9.      | The Course Attainment-Direct is computed by the Inpods software  |
| Sup 7.       | The Course Attainment-Direct is computed by the inpods software.   |

The process followed at Amrita School of Engineering, Coimbatore for CO computation in a theory course is given in Figure 3.2.1 (a) & (b). In the CO attainment calculation for a course, 80% is contributed through direct and 20% through Indirect. As per the university regulation, 50% of the direct is contributed by Cumulative Internal Examination (CIE) and 50% from Semester End Examinations (SEE) for theory courses. In the CIE, Periodical 1, Periodical 2 and Continuous Assessment contributes 15, 15 and 20 respectively. For Lab courses, 80% and 20% is contributed by continuous assessment and end semester examinations respectively to the direct attainment.



Fig. B. 3.2.1(a) CO attainment for theory courses

#### Inpods do the attainment calculation based on the following expression:





# **3.2.2.** Record the attainment of Course Outcomes of all courses with respect to set attainment levels

|              |     | Internal Exam | ination | End Semes<br>Examinati | ster<br>ion | Dire       | ct                                 |            |       | Final Co<br>Attainm       | urse<br>ent       | Target | Attainment |
|--------------|-----|---------------|---------|------------------------|-------------|------------|------------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
| Course       | COs | (CIE)         |         | (SEE)                  |             |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | ect   | 80% of Dire<br>20% of Inc | ect and<br>direct | (%)    | Yes/No     |
|              |     | Attainment    | Level   | Attainment             | Level       | Attainment | Level                              | Attainment | Level | Attainment                | Level             |        |            |
|              | CO1 | 42.62         | 2       | 18.03                  | 1           | 36.07      | 1.5                                | 80.5       | 3     | 44.95                     | 1.8               | 50     | No         |
| MEC100       | CO2 | 40.98         | 2       | 18.03                  | 1           | 37.70      | 1.5                                | 80.5       | 3     | 46.26                     | 1.8               | 50     | No         |
| (Engineering | CO3 | 57.38         | 2       | 18.03                  | 1           | 45.90      | 1.5                                | 80.5       | 3     | 52.82                     | 1.8               | 50     | Yes        |
| Mechanics)   | CO4 | 57.38         | 2       | 18.03                  | 1           | 37.70      | 1.5                                | 80.5       | 3     | 46.26                     | 1.8               | 50     | No         |
|              | CO5 | 78.69         | 3       | 18.03                  | 1           | 22.95      | 2                                  | 80.5       | 3     | 34.46                     | 2.2               | 50     | No         |

 Table B 3.2.2 (a) Attainment of course outcomes (2014-2018 Batch)

|            |     | Internal Exar | nination | End Sem<br>Examina | ester<br>tion | Dir        | rect                               |            |       | Final Co<br>Attainm      | urse<br>Ient      | Target | Attainment |
|------------|-----|---------------|----------|--------------------|---------------|------------|------------------------------------|------------|-------|--------------------------|-------------------|--------|------------|
| Course     | COs | (CIE)         | )        | (SEE               | )             |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | ct    | 80% of Dire<br>20% of In | ect and<br>direct | (%)    | Yes/No     |
|            |     | Attainment    | Level    | Attainment         | Level         | Attainment | Level                              | Attainment | Level | Attainment               | Level             |        |            |
|            | CO1 | 58.49         | 2        | 45.28              | 2             | 47.17      | 2                                  | 81.04      | 3     | 53.94                    | 2.2               | 50     | Yes        |
| CVL220     | CO2 | 43.40         | 2        | 45.28              | 2             | 47.17      | 2                                  | 81.04      | 3     | 53.94                    | 2.2               | 50     | Yes        |
| (Fluid     | CO3 | 58.49         | 2        | 45.28              | 2             | 49.06      | 2                                  | 81.04      | 3     | 55.45                    | 2.2               | 50     | Yes        |
| Mechanics) | CO4 | 56.60         | 2        | 45.28              | 2             | 45.28      | 2                                  | 81.04      | 3     | 52.43                    | 2.2               | 50     | Yes        |
|            | CO5 | 81.13         | 3        | 45.28              | 2             | 49.06      | 2.5                                | 81.04      | 3     | 55.45                    | 2.6               | 50     | Yes        |

|             |     | Internal Exa | mination | End Sem<br>Examina | ester<br>ation | Dire       | ct                                 |            |       | Final Cou<br>Attainm      | ırse<br>ent       | Target | Attainment |
|-------------|-----|--------------|----------|--------------------|----------------|------------|------------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
| Course C    | COs | (CIE         | )        | (SEE               |                |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | ect   | 80% of Dire<br>20% of Inc | ect and<br>lirect | (%)    | Yes/No     |
|             |     | Attainment   | Level    | Attainment         | Level          | Attainment | Level                              | Attainment | Level | Attainment                | Level             |        |            |
|             | CO1 | 75.00        | 3        | 67.86              | 3              | 73.21      | 3                                  | 71.36      | 3     | 72.84                     | 3                 | 50     | Yes        |
| CVL213      | CO2 | 80.36        | 3        | 67.86              | 3              | 76.79      | 3                                  | 71.36      | 3     | 75.70                     | 3                 | 50     | Yes        |
| Technology) | CO3 | 71.43        | 3        | 67.86              | 3              | 71.43      | 3                                  | 71.36      | 3     | 71.41                     | 3                 | 50     | Yes        |
|             | CO4 | 71.43        | 3        | 67.86              | 3              | 73.21      | 3                                  | 71.36      | 3     | 72.84                     | 3                 | 50     | Yes        |

|                     |     | Internal Exa | mination | End Sem<br>Examina | ester<br>ition | Dire       | ct                                 |            |       | Final Cou<br>Attainme     | irse<br>ent      | Target | Attainment |
|---------------------|-----|--------------|----------|--------------------|----------------|------------|------------------------------------|------------|-------|---------------------------|------------------|--------|------------|
| Course              | COs | (CIE)        | )        | (SEE               | )              |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | ect   | 80% of Dire<br>20% of Ind | ct and<br>lirect | (%)    | Yes/No     |
|                     |     | Attainment   | Level    | Attainment         | Level          | Attainment | Level                              | Attainment | Level | Attainment                | Level            |        |            |
|                     | CO1 | 76.36        | 3        | 25.45              | 1              | 65.45      | 2                                  | 88.10      | 3     | 69.98                     | 2.2              | 50     | Yes        |
|                     | CO2 | 80.00        | 3        | 25.45              | 1              | 70.91      | 2                                  | 88.10      | 3     | 74.35                     | 2.2              | 50     | Yes        |
| CVL230              | CO3 | 74.55        | 3        | 25.45              | 1              | 61.82      | 2                                  | 88.10      | 3     | 67.08                     | 2.2              | 50     | Yes        |
| (Soli<br>Mechanics) | CO4 | 74.55        | 3        | 25.45              | 1              | 61.82      | 2                                  | 88.10      | 3     | 67.08                     | 2.2              | 50     | Yes        |
|                     | CO5 | 100.00       | 3        | 25.45              | 1              | 34.55      | 2                                  | 88.10      | 3     | 45.26                     | 2.2              | 50     | No         |
|                     | CO6 | 100.00       | 3        | 25.45              | 1              | 34.55      | 2                                  | 88.10      | 3     | 45.26                     | 2.2              | 50     | No         |

| Course   |     | Internal Examination |       | End Semester<br>Examination |       | Direct     |                                       |            |       | Final Co<br>Attainm       | ırse<br>ent       | Target | Attainment |
|--|-----|----------------------|-------|-----------------------------|-------|------------|---------------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
|  | COs | (CIE)                |       | (SEE)                       |       |            | 50% of<br>CIE<br>and<br>50% of<br>SEE | Indire     | ect   | 80% of Dire<br>20% of Inc | ect and<br>lirect | (%)    | Yes/No     |
|  |     | Attainment           | Level | Attainment                  | Level | Attainment | Level                                 | Attainment | Level | Attainment                | Level             |        |            |
| CVI 214  | CO1 | 87.27                | 3     | 36.36                       | 1     | 80.00      | 2                                     | 88.88      | 3     | 81.78                     | 2.2               | 50     | Yes        |
| CVL314<br>(Advanced<br>Structural<br>Analysis) | CO2 | 90.91                | 3     | 36.36                       | 1     | 87.27      | 2                                     | 88.88      | 3     | 87.59                     | 2.2               | 50     | Yes        |
|  | CO3 | 100.00               | 3     | 36.36                       | 1     | 69.09      | 2                                     | 88.88      | 3     | 73.05                     | 2.2               | 50     | Yes        |
| Anarysis)                                      | CO4 | 100.00               | 3     | 36.36                       | 1     | 70.91      | 2                                     | 88.88      | 3     | 74.50                     | 2.2               | 50     | Yes        |

| Course                             |     | Interr<br>Examina | nal<br>ation | End Sem<br>Examina | ester<br>ation | Direct     |                                    | Indirect   |          | Final Cour<br>Attainme | rse<br>nt     | Target | Attainment |
|------------------------------------|-----|-------------------|--------------|--------------------|----------------|------------|------------------------------------|------------|----------|------------------------|---------------|--------|------------|
|                                    | COs | (CIF              | E)           | (SEE               | )              |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | Indirect |                        | t and<br>rect | (%)    | Yes/No     |
|                                    |     | Attainment        | Level        | Attainment         | Level          | Attainment | Level                              | Attainment | Level    | Attainment             | Level         |        |            |
|                                    | CO1 | 80.00             | 3            | 76.36              | 3              | 81.82      | 3                                  | 90.25      | 3        | 83.50                  | 3             | 50     | Yes        |
| CVL333<br>(Transportation          | CO2 | 98.18             | 3            | 76.36              | 3              | 89.09      | 3                                  | 90.25      | 3        | 89.32                  | 3             | 50     | Yes        |
| (Transportation<br>Engineering II) | CO3 | 92.73             | 3            | 76.36              | 3              | 90.91      | 3                                  | 90.25      | 3        | 90.78                  | 3             | 50     | Yes        |
|                                    | CO4 | 100.00            | 3            | 76.36              | 3              | 83.64      | 3                                  | 90.25      | 3        | 84.96                  | 3             | 50     | Yes        |

| Course              | COs | Internal Exa | mination | End Sem<br>Examina | ester<br>ation | Dire       | ect                                | Indire     | ect   | Final Co<br>Attainm       | ırse<br>ent       | Target | Attainment |
|---------------------|-----|--------------|----------|--------------------|----------------|------------|------------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
|                     |     | (CIE         | ))       | (SEE)              |                |            | 50% of<br>CIE and<br>50% of<br>SEE |            |       | 80% of Dire<br>20% of Inc | ect and<br>lirect | (%)    | Yes/No     |
|                     |     | Attainment   | Level    | Attainment         | Level          | Attainment | Level                              | Attainment | Level | Attainment                | Level             |        |            |
|                     | CO1 | 74.55        | 3        | 38.18              | 1              | 69.09      | 2                                  | 90.04      | 3     | 73.28                     | 2.2               | 50     | Yes        |
| CVL316              | CO2 | 85.45        | 3        | 38.18              | 1              | 67.27      | 2                                  | 90.04      | 3     | 71.83                     | 2.2               | 50     | Yes        |
| (Design of<br>Steel | CO3 | 94.55        | 3        | 38.18              | 1              | 54.55      | 2                                  | 90.04      | 3     | 61.64                     | 2.2               | 50     | Yes        |
| Structures)         | CO4 | 94.55        | 3        | 38.18              | 1              | 56.36      | 2                                  | 90.04      | 3     | 63.10                     | 2.2               | 50     | Yes        |
|                     | CO5 | 70.91        | 3        | 38.18              | 1              | 60.00      | 2                                  | 90.04      | 3     | 66.01                     | 2.2               | 50     | Yes        |

|                       |     | Internal Exam | nination | End Semester<br>Examination |       | Direct     |                                 | IE Indirect |       | Final Cou<br>Attainme     | irse<br>ent      | Target | Attainment |
|-----------------------|-----|---------------|----------|-----------------------------|-------|------------|---------------------------------|-------------|-------|---------------------------|------------------|--------|------------|
| Course                | COs | (CIE)         | )        | (SEE)                       | )     |            | 50% of CIE<br>and 50% of<br>SEE | Indire      | ct    | 80% of Dire<br>20% of Ind | ct and<br>lirect | (%)    | Yes/No     |
|                       |     | Attainment    | Level    | Attainment                  | Level | Attainment | Level                           | Attainment  | Level | Attainment                | Level            |        |            |
| -                     | CO1 | 76.47         | 3        | 91.18                       | 3     | 82.35      | 3                               | 94.82       | 3     | 84.85                     | 3                | 50     | Yes        |
| CVL464                | CO2 | 76.47         | 3        | 91.18                       | 3     | 85.29      | 3                               | 94.82       | 3     | 87.199                    | 3                | 50     | Yes        |
| (Ad.<br>Environmental | CO3 | 61.76         | 3        | 91.18                       | 3     | 73.53      | 3                               | 94.82       | 3     | 77.79                     | 3                | 50     | Yes        |
| Engg)                 | CO4 | 61.76         | 3        | 91.18                       | 3     | 79.41      | 3                               | 94.82       | 3     | 82.49                     | 3                | 50     | Yes        |
|                       | CO5 | 38.24         | 1        | 91.18                       | 3     | 88.24      | 2                               | 94.82       | 3     | 89.55                     | 2.2              | 50     | Yes        |

|                                    |     | Internal Examination |       | End Semester<br>Examination |       | Direct     |                                    | _          |       | Final Co<br>Attainm       | urse<br>Ient      | Target | Attainment |
|------------------------------------|-----|----------------------|-------|-----------------------------|-------|------------|------------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
| Course                             | COs | (CIE)                | -     | (SEE)                       |       |            | 50% of<br>CIE and<br>50% of<br>SEE | Indire     | ct    | 80% of Dire<br>20% of Inc | ect and<br>direct | (%)    | Yes/No     |
|                                    |     | Attainment           | Level | Attainment                  | Level | Attainment | Level                              | Attainment | Level | Attainment                | Level             |        |            |
| CVI 462                            | CO1 | 90.91                | 3     | 36.36                       | 1     | 90.91      | 2                                  | 92.77      | 3     | 91.28                     | 2.2               | 50     | Yes        |
| (Water<br>Resource                 | CO2 | 81.82                | 3     | 36.36                       | 1     | 72.73      | 2                                  | 92.77      | 3     | 76.74                     | 2.2               | 50     | Yes        |
| Systems<br>planning and<br>design) | CO3 | 100.00               | 3     | 36.36                       | 1     | 54.55      | 2                                  | 92.77      | 3     | 62.19                     | 2.2               | 50     | Yes        |
|                                    | CO4 | 100.00               | 3     | 36.36                       | 1     | 45.45      | 2                                  | 92.77      | 3     | 54.92                     | 2.2               | 50     | Yes        |

|           |     | Internal Exan | nination | End Seme<br>Examinat | ster<br>ion | D          | irect                           |            |       | Final Co<br>Attainm       | urse<br>lent      | Target | Attainment |
|-----------|-----|---------------|----------|----------------------|-------------|------------|---------------------------------|------------|-------|---------------------------|-------------------|--------|------------|
| Course    | COs | (CIE)         |          | (SEE)                |             |            | 50% of CIE<br>and 50% of<br>SEE | Indire     | ct    | 80% of Dire<br>20% of Ine | ect and<br>direct | (%)    | Yes/No     |
|           |     | Attainment    | Level    | Attainment           | Level       | Attainment | Level                           | Attainment | Level | Attainment                | Level             |        |            |
|           | CO1 | 100           | 3        | 100                  | 3           | 100        | 3                               | 80         | 3     | 96                        | 3                 | 60     | Yes        |
| CVL499    | CO2 | 100           | 3        | 100                  | 3           | 100        | 3                               | 91         | 3     | 98.2                      | 3                 | 60     | Yes        |
| (Project) | CO3 | 88            | 3        | 88                   | 3           | 88         | 3                               | 95         | 3     | 89.4                      | 3                 | 60     | Yes        |
|           | CO4 | 95            | 3        | 95                   | 3           | 95         | 3                               | 95         | 3     | 95                        | 3                 | 60     | Yes        |
|           | CO5 | 93            | 3        | 93                   | 3           | 93         | 3                               | 91         | 3     | 92.6                      | 3                 | 60     | Yes        |

|         | CO1   | CO2   | CO3   | CO4   | CO5   | CO6   |
|---------|-------|-------|-------|-------|-------|-------|
| ENG111  | 70.13 | 16.80 | 96.80 | 59.97 | 59.97 |       |
| MAT111  | 43.55 | 22.58 | 24.19 | 59.68 | 27.42 | 14.52 |
| EEE100  | 11.61 | 14.19 | 21.94 | 54.19 | 25.81 |       |
| CUL101  | 74.19 | 88.71 | 87.10 | 88.71 | 93.55 |       |
| PHY100  | 46.66 | 46.66 | 54.40 |       |       |       |
| PHY181  | 94.31 | 94.31 | 94.31 |       |       |       |
| CSE100  | 49.71 | 54.09 | 56.27 | 51.00 |       |       |
| CSE180  | 51    | 50    | 49    | 46    |       |       |
| MEC180  | 68.39 | 68.39 | 68.39 | 68.39 |       |       |
| CHY181  | 57.73 | 57.73 | 57.73 | 57.73 | 56.42 |       |
| CHY100  | 55.20 | 55.20 | 44.71 |       |       |       |
| CUL102  | 77.05 | 77.05 | 85.25 | 96.72 | 90.16 |       |
| ECE100  | 37.70 | 39.34 | 39.34 | 59.02 |       |       |
| ENG112  | 81.17 | 94.71 | 94.71 | 72.56 | 72.56 |       |
| MAT112  | 43.43 | 51.30 | 40.81 | 40.81 | 40.81 | 40.81 |
| `MEC100 | 32.79 | 34.10 | 27.54 | 41.97 | 19.67 |       |
| MAT211  | 32.59 | 39.61 | 43.82 | 38.21 | 38.21 | 38.21 |
| CVL 200 | 68.13 | 70.93 | 66.72 | 68.13 |       |       |
| CVL 201 | 88.36 | 88.36 | 78.54 | 88.36 |       |       |
| CVL 210 | 49.18 | 50.59 | 37.96 | 29.53 |       |       |
| CVL 211 | 75.30 | 69.69 | 65.47 | 57.05 | 68.28 |       |
| CVL 220 | 53.94 | 53.94 | 55.45 | 52.43 | 55.45 |       |
| CVL 291 | 76.84 | 72.70 | 76.84 |       |       |       |
| CVL 293 | 94.35 | 90.14 | 94.35 | 90.14 |       |       |

 Table B 3.2.2 (b)
 Attainment of all courses outcomes (2014-2018 Batch)

| ENG251  | 73.51 | 73.51 | 73.51 | 91.97 | 73.51 |       |
|---------|-------|-------|-------|-------|-------|-------|
| HUM250  | 92.67 | 92.67 | 92.67 | 92.67 | 89.33 |       |
| HUM256  | 100   | 100   | 100   | 100   |       |       |
| HUM258  | 93.42 | 93.42 | 93.42 | 93.42 |       |       |
| CVL 212 | 60.70 | 46.15 | 50.52 | 53.43 |       |       |
| CVL 213 | 72.84 | 75.70 | 71.41 | 72.84 |       |       |
| CVL 221 | 56.35 | 43.94 | 48.07 | 56.35 |       |       |
| CVL 230 | 69.98 | 74.35 | 67.08 | 67.08 | 45.26 | 45.26 |
| CVL 290 | 81.86 | 81.86 | 81.86 |       |       |       |
| CVL 292 | 66.58 | 66.58 | 67.96 |       |       |       |
| MAT212  | 57.40 | 60.21 | 60.21 | 55.30 | 51.79 | 57.40 |
| HUM252  | 89.61 | 89.61 | 89.61 | 89.61 | 80.19 |       |
| HUM257  | 98.51 | 98.51 | 98.51 | 98.51 | 98.51 |       |
| HUM259  | 98.53 | 98.53 | 98.53 | 98.53 | 98.53 |       |
| SSK111  | 85.86 | 85.98 | 60.28 | 49.04 | 61.16 | 73.69 |
| CVL 314 | 81.78 | 87.59 | 73.05 | 74.50 |       |       |
| CVL 315 | 68.23 | 66.77 | 88.59 |       |       |       |
| CVL 331 | 84.23 | 81.32 | 76.96 | 85.69 |       |       |
| CVL 332 | 85.90 | 97.53 | 96.08 | 91.72 |       |       |
| ENV200  | 80.83 | 83.69 | 82.26 | 80.83 |       |       |
| CVL 391 | 73.08 | 73.08 | 71.62 |       |       |       |
| CVL 393 | 58.88 | 45.79 | 28.34 |       |       |       |
| SSK112  | 92.61 | 92.73 | 29.31 | 21.83 | 34.55 | 33.21 |
| HIN100  | 100   | 100   | 100   | 56.67 | 56.67 |       |
| MAL100  | 97.80 | 97.80 | 97.80 | 91.65 | 91.65 |       |
| TAM100  | 96.16 | 96.16 | 96.16 | 96.16 |       |       |

| CVL 322 | 71.51 | 74.42 | 65.69 | 74.42 | 77.33 |       |
|---------|-------|-------|-------|-------|-------|-------|
| CVL 316 | 73.28 | 71.83 | 61.64 | 63.10 | 66.01 |       |
| CVL 323 | 47.49 | 28.58 | 34.40 | 28.58 |       |       |
| CVL 333 | 83.50 | 89.32 | 90.78 | 84.96 |       |       |
| CVL 390 | 28.50 | 28.50 | 21.23 |       |       |       |
| CVL 392 | 75.27 | 76.72 | 75.27 |       |       |       |
| PHY271  | 69.62 | 69.62 | 73.98 | 62.35 | 57.98 |       |
| SSK113  | 50.43 | 50.55 | 45.31 | 45.11 | 46.19 | 44.85 |
| CVL453  | 86.01 | 71.41 | 76.61 | 76.77 | 89.33 |       |
| CVL464  | 84.85 | 87.20 | 77.79 | 82.49 | 89.55 |       |
| CVL455  | 75.34 | 59.44 | 65.74 | 58.24 | 65.77 | 49.84 |
| CVL471  | 89.18 | 91.46 | 86.89 |       |       |       |
| CVL474  | 85.82 | 81.55 | 86.00 |       |       |       |
| CVL 491 | 56.24 | 61.95 | 56.24 |       |       |       |
| CVL 493 | 84.68 | 96.32 | 67.23 | 84.68 |       |       |
| CVL 497 | 84.68 | 78.86 | 83.23 |       |       |       |
| MNG400  | 71.25 | 75.32 | 71.04 | 83.98 | 75.43 | 83.43 |
| CHY259  | 64.85 | 62.06 | 63.91 |       |       |       |
| CVL 480 | 70.22 | 68.16 | 80.34 |       |       |       |
| CVL 458 | 66.87 | 66.90 | 63.53 | 60.97 | 64.51 |       |
| CVL 462 | 91.28 | 76.74 | 62.19 | 54.92 |       |       |
| CVL 499 | 96    | 98.20 | 89.40 | 95    | 92.60 |       |
| CSE 479 | 61.27 | 63.94 | 63.19 | 73.42 | 68.20 |       |
|         |       |       |       |       |       |       |

3.3. Attainment of Program Outcomes and Program Specific Outcomes

# **3.3.1.** Describe the assessment tools and processes used for measuring the attainment of each Program Outcomes and Program Specific Outcomes

• The PO/PSO attainment is computed through direct and indirect. The direct part is computed through the attainment of COs from all courses, using the Course Articulation Matrix (CAM). The indirect attainments of the POs are computed through survey among stakeholders as shown in Fig. B 3.3.1.



Fig.B. 3.3.1 PO/PSO attainment

| Direct   | Attainment of PO/PSO through a Course:  |
|----------|---|
|          |   |
|          | $PO_{ij}$ Attainment = $\frac{\sum_{k=1}^{COmax} CA_k * CAM_{ik}}{\sum^{COmax} CAM_{ik}}$ |
|          | $\Sigma_{k=1}$ choic  |
|          | Where, PO <sub>ij</sub> is the Attainment of 'i' th PO through the course 'j'             |
|          | COmax is the maximum number of COs in the course 'j'                                      |
|          | CA is Course Attainment   |
|          | $CAM_{ik}$ is the Course Articulation matrix for the 'i' th PO for the course 'j' with    |
|          | ʻk' COs   |
|          | Attainment of PO/PSO through all courses  |
|          | Poi Attainment = Average across all Courses Addressing that POs/PSOs                      |
| Indirect | Based on Survey   |
|          | $PO_i = \frac{\sum_{i=1}^{5} i * no. of students gave i option}{5 * no. of responses}$    |
|          | Where, PO <sub>i</sub> is the attainment of the 'i'th PO                                  |

# • PO/PSO Attainment is Computed based on the following expressions

## **3.3.2.** Provide results of evaluation of each PO & PSO

### Table B 3.3.2 (a) PO-PSO Attainment- Direct method

2014-2018 Batch

|        | PO1  | PO2  | PO3  | PO4 | PO5  | PO6 | PO7 | PO8 | PO9  | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|--------|------|------|------|-----|------|-----|-----|-----|------|------|------|------|------|------|------|
| ENG111 |      |      |      |     |      |     |     | 2.6 | 2.6  | 2.6  |      | 2.6  |      |      |      |
| MAT111 | 1.61 | 1.6  |      |     |      |     |     |     |      |      |      |      |      |      |      |
| EEE100 | 1.48 | 1.36 |      |     |      |     |     |     |      |      |      |      |      |      |      |
| CUL101 |      |      |      |     |      | 3   | 3   | 3   | 3    | 3    | 3    | 3    |      |      |      |
| MEC181 | 1    | 1    | 1    | 1   |      | 1   |     |     |      | 1    |      | 1    |      |      |      |
| PHY100 | 2.2  | 2.2  |      |     |      |     |     |     |      |      |      | 2.2  |      |      |      |
| PHY181 | 3    | 3    | 3    | 3   | 3    | 3   |     |     |      |      |      |      |      |      |      |
| CSE100 | 2.08 | 2.10 | 2.12 |     |      |     |     |     |      |      |      |      |      |      |      |
| CSE180 | 2.1  | 2.09 | 2.1  |     | 2.2  |     |     |     |      |      |      |      |      |      |      |
| MEC180 | 2.28 | 2.28 | 2.28 |     | 2.28 |     |     |     | 2.28 | 2.28 |      | 2.28 |      |      |      |
| CHY181 | 2.2  | 2.2  | 2.2  |     |      |     |     |     |      |      |      |      |      |      |      |
| CHY100 | 1.8  | 1.8  | 1.8  | 1.8 |      |     |     |     |      |      |      |      |      |      |      |
| CUL102 |      |      |      |     |      | 3   | 3   | 3   | 3    | 3    | 3    | 3    |      |      |      |
| ECE100 | 1.72 | 1.73 | 1.83 |     |      |     |     |     |      |      |      | 1.75 |      |      |      |
| EEE180 | 1    | 1    | 1    |     |      |     |     |     | 1    |      |      | 1    |      |      |      |
| ENG112 |      |      |      |     |      |     |     | 3   | 3    | 3    |      | 3    |      |      |      |

| MAT112  | 1.72 | 1.71 | 1.53 |      |     |     |     |     |      |      |     | 2    |      |      |   |
|---------|------|------|------|------|-----|-----|-----|-----|------|------|-----|------|------|------|---|
| MEC100  | 1.56 | 1.56 | 1.54 | 1.56 |     |     |     |     |      |      |     | 1.56 |      |      |   |
| MEC182  | 1    | 1    | 1    | 1    | 1   | 1   |     |     |      | 1    |     | 1    |      |      |   |
| MAT211  | 1.92 | 1.96 | 2.04 |      |     |     |     |     |      |      |     |      | 1.93 |      |   |
| CVL 200 | 2.64 | 2.5  | 2.6  |      |     | 2.7 |     | 2.6 |      |      |     |      | 2.53 |      |   |
| CVL 201 | 2.6  | 2.6  | 2.6  |      | 2.6 | 2.6 | 2.6 |     | 2.6  |      |     |      | 2.6  |      |   |
| CVL 210 | 2.1  | 2.1  | 1.8  |      | 1.8 |     |     |     |      |      |     | 2    | 2.1  |      |   |
| CVL 211 | 2.52 | 2.56 | 2.2  |      |     |     |     |     |      |      |     |      | 2.2  |      |   |
| CVL 220 | 2.28 | 2.28 |      |      |     |     |     |     |      |      |     |      | 2.28 |      |   |
| CVL 291 | 2.84 | 2.84 |      |      |     |     |     |     | 2.84 | 2.84 |     |      | 2.84 |      |   |
| CVL 293 | 3    | 3    |      |      |     |     |     |     | 3    | 3    |     | 3    | 3    |      |   |
| ENG251  |      |      |      |      |     | 3   |     |     | 3    | 3    | 3   | 3    |      |      |   |
| HUM250  |      |      |      |      |     | 3   |     | 3   | 3    | 3    | 3   | 3    |      |      |   |
| HUM256  |      |      |      |      |     | 2.6 | 2.6 | 2.6 | 2.6  | 2.6  | 2.6 | 2.6  |      |      |   |
| HUM258  |      | 3    | 3    |      |     | 3   | 3   | 3   | 3    | 3    | 3   | 3    |      |      |   |
| CVL 212 | 2    | 2    | 1.8  | 2    |     |     |     |     | 1.8  | 1.8  |     | 2    | 2    |      |   |
| CVL 213 | 3    | 3    | 3    |      |     |     |     |     |      |      |     |      |      |      | 3 |
| CVL 221 | 3    | 3    | 3    |      |     |     |     |     |      |      |     |      | 3    |      |   |
| CVL 230 | 2.2  | 2.2  |      |      |     |     |     |     |      |      |     |      | 2.2  |      |   |
| CVL 290 | 3    |      |      | 3    |     |     |     |     | 3    | 3    |     | 3    | 3    | 3    | 3 |
| CVL 292 | 2.84 | 2.84 |      | 2.84 |     |     |     |     | 2.84 | 2.84 |     | 2.84 | 2.84 | 2.84 |   |

| MAT212  | 3    | 3    | 3    |      |      |      |     |   |      |      |      |      | 3    |      |      |
|---------|------|------|------|------|------|------|-----|---|------|------|------|------|------|------|------|
| HUM252  |      |      |      |      |      | 3    |     | 3 | 3    | 3    | 3    | 3    |      |      |      |
| HUM257  |      |      |      |      |      | 3    | 3   | 3 | 3    | 3    | 3    | 3    |      |      |      |
| HUM259  |      | 3    | 3    |      |      | 3    | 3   | 3 | 3    | 3    | 3    | 3    |      |      |      |
| SSK111  |      | 2.2  |      | 2.2  |      |      |     | 3 | 2.7  | 2.52 |      | 2.52 |      |      |      |
| CVL 314 | 2.2  | 2.2  |      |      | 2.2  | 2.2  |     |   |      |      |      | 2.2  | 2.2  |      |      |
| CVL 315 | 2.6  | 2.6  | 2.6  |      | 2.6  |      |     |   | 2.6  | 2.6  |      | 2.6  | 2.6  |      |      |
| CVL 331 | 3    | 3    | 3    | 3    |      | 3    |     | 3 |      |      |      |      | 3    |      |      |
| CVL 332 | 3    | 3    | 3    |      |      | 3    |     |   |      |      |      | 3    | 3    |      |      |
| ENV200  | 3    | 3    | 3    | 3    |      | 3    | 3   | 3 | 3    | 3    |      | 3    | 3    | 3    | 3    |
| CVL 391 | 2.84 | 2.84 |      | 2.84 |      |      |     |   | 2.84 | 2.84 |      | 2.84 | 2.84 | 2.84 | 2.84 |
| CVL 393 | 2.15 |      | 2.09 | 2.09 | 2.15 | 2.17 | 2.2 |   | 2.09 | 2.15 | 2.04 | 2.09 | 2.15 | 2.15 | 2.2  |
| SSK112  |      | 2.2  |      | 2.2  |      |      |     |   | 2.6  | 2.52 | 3    | 2.49 |      |      |      |
| HIN100  |      |      |      |      |      |      |     |   | 2.2  | 2.2  |      |      |      |      |      |
| MAL100  |      |      |      |      |      |      |     |   | 3    | 3    |      |      |      |      |      |
| TAM100  |      |      |      |      |      |      |     |   | 2.25 | 3    |      |      |      |      |      |
| CVL 322 | 2.86 | 2.88 | 2.87 | 3    | 2.87 |      | 3   |   | 3    | 3    | 3    |      |      |      |      |
| CVL 316 | 2.2  | 2.2  | 2.2  | 2.2  | 2.2  |      |     |   | 2.2  | 2.2  |      |      | 2.2  | 2.2  |      |
| CVL 323 | 2.6  | 2.6  | 2.6  | 2.6  |      |      |     |   |      |      |      |      | 2.6  | 2.6  |      |
| CVL 333 | 3    | 3    | 3    | 3    | 3    | 3    | 3   |   | 3    |      |      |      | 3    |      |      |
| CVL 390 | 1.4  | 1.4  | 1.4  | 1.4  | 1.4  | 1.4  |     |   | 1.4  | 1.4  | 1.4  |      | 1.4  | 1.4  | 1.4  |

| CVL 392              | 2.9  |      |      | 2.9  |      |      |      |      | 2.9  | 2.9  |      |      | 2.9  |      |      |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| PHY271               | 2.2  | 2.2  | 2.2  | 2.2  |      |      |      |      |      |      |      | 2.2  | 2.2  |      |      |
| SSK113               |      | 2.2  |      | 2.2  |      |      |      | 2.6  | 2.47 | 2.36 |      | 2.32 |      |      |      |
| CVL453               | 3    | 3    | 3    | 3    | 3    |      |      |      | 3    | 3    |      |      |      | 3    |      |
| CVL464               | 2.89 | 3    |      |      |      |      |      |      |      |      |      |      | 2.84 | 2.73 |      |
| CVL455               | 2.43 | 2.49 | 2.47 | 2.2  | 2.2  |      |      |      |      | 2.2  |      |      | 2.4  |      |      |
| CVL471               | 3    | 3    |      | 3    | 3    | 3    | 3    |      | 3    | 3    |      | 3    | 3    |      |      |
| CVL474               | 3    | 3    |      |      |      |      | 3    |      |      |      |      | 3    | 3    |      |      |
| CVL 491              | 2.68 |      |      | 2.68 |      |      |      |      | 2.68 | 2.68 |      |      | 2.68 |      |      |
| CVL 493              | 2.76 | 2.77 |      | 2.68 | 2.74 | 2.68 |      | 2.76 | 2.76 | 2.68 | 3    | 2.76 | 2.76 | 2.78 | 2.79 |
| CVL 497              |      | 2.84 |      | 2.84 | 2.84 | 2.84 | 2.84 | 2.84 | 2.84 | 2.84 | 2.84 | 2.84 |      |      | 2.84 |
| MNG400               | 2.75 | 2.85 | 2.77 | 2.83 | 3    | 2.73 | 3    | 2.73 | 2.73 | 2.70 | 2.65 | 2.73 |      |      | 2.73 |
| CHY259               | 2.52 | 2.36 |      |      |      |      |      |      |      |      |      |      | 2.47 |      |      |
| CVL 480              | 2.8  | 2.8  | 2.6  |      | 3    |      |      | 2.2  |      |      | 2.4  | 2.2  |      |      | 2.6  |
| CVL 458              | 2.77 | 2.76 | 2.6  | 2.8  | 3    | 2.6  |      |      | 2.6  | 2.6  | 2.6  | 2.6  |      |      |      |
| CVL 462              | 2.2  | 2.2  | 2.2  | 2.2  |      |      |      |      |      |      |      |      |      | 2.2  |      |
| CVL 499              | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    | 3    |
| CSE 479              | 2.51 | 2.56 | 2.52 |      |      |      |      | 3    |      |      |      |      | 2.6  |      |      |
| Direct<br>Attainment | 2.41 | 2.41 | 2.35 | 2.45 | 2.50 | 2.65 | 2.89 | 2.85 | 2.68 | 2.63 | 2.76 | 2.51 | 2.59 | 2.60 | 2.67 |

| Survey              | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|------|------|
| Student exit survey | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 3    | 3    | 3    |
| Indirect Attainment | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3   | 3    | 3    | 3    | 3    | 3    | 3    |

Table B 3.3.2 (c) PO -PSO Attainment - 2014-2018 Batch

|                                  | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | <b>PO7</b> | PO8  | PO9  | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|----------------------------------|------|------|------|------|------|------|------------|------|------|------|------|------|------|------|------|
| Direct<br>Attainment             | 2.41 | 2.41 | 2.35 | 2.45 | 2.50 | 2.65 | 2.89       | 2.85 | 2.68 | 2.63 | 2.76 | 2.51 | 2.59 | 2.60 | 2.67 |
| 80% of Direct<br>Attainment      | 1.93 | 1.93 | 1.88 | 1.96 | 2.00 | 2.12 | 2.31       | 2.28 | 2.14 | 2.10 | 2.21 | 2.00 | 2.07 | 2.08 | 2.14 |
| 20% of<br>Indirect<br>Attainment | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6        | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  | 0.6  |
| PO –PSO<br>Attainment            | 2.53 | 2.53 | 2.48 | 2.56 | 2.60 | 2.72 | 2.91       | 2.88 | 2.74 | 2.70 | 2.81 | 2.60 | 2.67 | 2.68 | 2.74 |

| CRITERION 4<br>Table B.4(a) Tot  | Students' Per<br>al number of students | <b>formance</b><br>s admitted in the Pr | 100<br>Program       |  |  |
|--|--|---|----------------------|--|--|
| Item<br>(Information to be provide<br>cumulatively for all the shif<br>with explicit headings,<br>wherever applicable)   | ed<br>fts<br>(2018-2019)               | CAYm1<br>(2017-2018)                    | CAYm2<br>(2016-2017) |  |  |
| Sanctioned intake of the program (N)   | 69                                     | 69                                      | 69                   |  |  |
| Total number of students<br>admitted in first year minus<br>number of students migrated<br>other programs/institutions<br>plus no. of students migrate<br>to this program (N1) | s<br>to<br>55<br>d                     | 59                                      | 65                   |  |  |
| Number of students admitte<br>in 2nd year in the same batc<br>via lateral entry (N2)   | d<br>h O                               | 0                                       | 0                    |  |  |
| Separate division students, applicable (N3)  | if 0                                   | 0                                       | 0                    |  |  |
| Total number of students<br>admitted in the Program (N1<br>N2 + N3)  | + 55                                   | 59                                      | 65                   |  |  |

CAY - Current Academic Year

CAYm1- Current Academic Year minus1= Current Assessment Year

CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1 LYG – Last Year Graduate minus 1

LYGm1 - Last Year Graduate minus 1

LYGm2 – Last Year Graduate minus 2

Number of students who have successfully graduated without backlogs in any semester/year of study N1 + N2 + N3(Without Backlog means no compartment Year of entry (As defined above) or failures in any semester/year of study) Ι III Year **II** Year **IV Year** Year CAY 55 (2018-2019)CAYm1 59 41 (2017-2018) CAYm2 65 34 47 (2016-2017) CAYm3 64 56 40 33 (2015-2016) CAYm4 (LYG) 33 30 29 29 57 (2014-2015) CAYm5 (LYGm1) 69 50 44 43 43 (2013-2014) CAYm6 53 27 27 (LYGm2) 26 26 (2012-2013)

 Table B.4(b) Number of students who have successfully graduated without backlogs in any semester/year of study

| Year of entry   | N1 + N2 +<br>N3<br>(As defined<br>above) | Number of students who have successfully<br>graduated<br>(Students with backlog in stipulated period<br>of study) |         |          |         |  |  |  |
|-----------------|--|---|---------|----------|---------|--|--|--|
|                 |  | I Year  | II Year | III Year | IV Year |  |  |  |
| CAY (2018-2019) | 55                                       |   |         |          |         |  |  |  |
| CAYm1 (2017-    |  |   |         |          |         |  |  |  |
| 2018)           | 59                                       | 4   |         |          |         |  |  |  |
| CAYm2 (2016-    | 65                                       | 8   | 10      |          |         |  |  |  |
| 2017)           | 05                                       | 0   | 10      |          |         |  |  |  |
| CAYm3 (2015-    | 64                                       | _   | 5       | 11       |         |  |  |  |
| 2016)           |  |   | 5       | 11       |         |  |  |  |
| CAYm4 (LYG)     | 57                                       | 1   | 5       | 15       | 20      |  |  |  |
| (2014-2015)     | 51                                       | 1   | 5       | 15       | 20      |  |  |  |
| CAYm5 (LYGm1)   | 60                                       | 5   | 0       | 10       | 21      |  |  |  |
| (2013-2014)     | 09                                       | 5   | 7       | 10       | 21      |  |  |  |
| CAYm6 (LYGm2)   | 53                                       | 5   | 12      | 15       | 26      |  |  |  |
| (2012-2013)     | 55                                       | 5   | 12      | 15       | 20      |  |  |  |
| CAY (2018-2019) |  |   |         |          |         |  |  |  |

**Table B.4(c)** Number of students who have successfully graduated with backlogs in stipulated period of study

4.1. Enrolment Ratio (20) = N1/N= 179/207= 86.47%

### Table B.4.1 Enrolment Ratio

| Item   |       |
|--|-------|
| (Students enrolled at the First Year Level on average basis during the | Marks |
| last three years starting from current academic year)                  |       |
| >=90% students enrolled  | 20    |
| >=80% students enrolled  | 18    |
| >=70% students enrolled  | 16    |
| >=60% students enrolled  | 14    |
| Otherwise  | 0     |

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#### 4.2. Success Rate in the stipulated period of the program

#### 4.2.1. Success rate without backlogs in any semester/year of study

SI= (Number of students who have graduated from the program without backlog)/ (Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable)

Average SI = Mean of Success Index (SI) for past three batches

Success rate without backlogs in any semester/year of study =  $15 \times$  Average SI Success rate without backlogs in any semester/year of study is listed Table B.4.2.1

| Item                            | Last Year<br>Graduate, LYG<br>(CAYm4) (2014-<br>2015) | Last Year<br>Graduate<br>minus 1, LYGm1<br>(CAYm5)<br>(2013-2014) | Last Year<br>Graduate<br>minus 2, LYGm2<br>(CAYm6)<br>(2012-2013) |
|---------------------------------|---|---|---|
| Number of students admitted     |   |   |   |
| in the corresponding First Year | 57  |   |   |
| + admitted in 2nd year via      | 57  | 69  | 53  |
| lateral entry and separate      |   |   |   |
| division, if applicable         |   |   |   |
| Number of students who have     |   |   |   |
| graduated without backlogs in   | 29  | 43  | 26  |
| the stipulated period           |   |   |   |
| Success Index (SI)              | 0.508   | 0.623   | 0.49  |
|                                 | -   |   |   |

Table B.4.2.1 Success rate without backlogs in any semester/year of study

Success rate without backlogs in any semester/year of study =  $15 \times 0.54 = 8.1$ 

#### 4.2.2. Success rate with backlog in stipulated period of study

SI= (Number of students who graduated from the program in the stipulated period of course duration)/ (Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable)

Average SI = mean of Success Index (SI) for past three batches Success rate =  $5 \times \text{Average SI}$  Success rate with backlogs in any semester/year of study is listed Table B.4.2.2

| Item   | Last Year<br>Graduate,<br>LYG<br>(CAYm4)<br>(2014-2015) | Last Year<br>Graduate<br>minus<br>1, LYGm1<br>(CAYm5)<br>(2013-2014) | Last Year<br>Graduate minus<br>2, LYGm2<br>(CAYm6)<br>(2012-2013) |
|--|---|--|---|
| Number of students admitted in the<br>corresponding First Year + admitted in 2nd<br>year via lateral entry and separate division,<br>if applicable | 57  | 69   | 53  |
| Number of students who have graduated with backlogs in the stipulated period   | 20  | 21   | 26  |
| Success Index (SI)   | 0.35  | 0.30   | 0.49  |
| Average Success Index  |   | 0.38   |   |

Table B.4.2.2 Success rate with backlog in stipulated period of study

Success rate =  $5 \times \text{Average SI} = 5 \times 0.38 = 1.9$ 

**Note:** If 100% students clear without any backlog then also total marks scored will be 20 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

### 4.3. Academic Performance in Second Year

Academic Performance = Average API (Academic Performance Index), where

 $API = ((Mean of 2^{nd} Year Grade Point Average of all successful Students on a 10 point scale) or (Mean of the percentage of marks of all successful students in Second Year/10)) x (number of successful students/number of students appeared in the examination)$ 

Successful students are those who are permitted to proceed to the Third year.

Academic performance in second year is listed in Table B.4.3

|  | CAYm1  | CAYm2  | CAYm3  |
|--|--------|--------|--------|
| Academic Performance   | (2017- | (2016- | (2015- |
|  | 2018)  | 2017)  | 2016)  |
| Mean of CGPA or Mean Percentage of all successful students (X) | 6.169  | 6.83   | 6.58   |
| Total no. of successful students (Y)                           | 65     | 63     | 55     |
| Total no. of students appeared in the examination (Z)          | 65     | 63     | 55     |
| $API = X^* (Y/Z)$  | 6.169  | 6.83   | 6.58   |
| Average $API = (AP1 + AP2 + AP3)/3$                            | 6.52   |        |        |

## Table B.4.3 Academic Performance in Second Year

## 4.4. Placement, Higher Studies and Entrepreneurship

Assessment Points =  $30 \times$  average placement

Assessment points for average placement is listed in Table B.4.4

The placement details are mentioned in Table B.4.4.a

| Table B.4.4 Placement, | Higher | Studies an | nd Entre | oreneurship |
|------------------------|--------|------------|----------|-------------|
|                        | 0 -    |            |          |             |

|  | CAYm1    | CAYm2    | CAYm3    |
|--|----------|----------|----------|
| Item   | (2014-   | (2013-   | (2012-   |
|  | 2018)    | 2017)    | 2016)    |
| Total No. of Final Year Students (N)                     | 55       | 67       | 53       |
| No. of students placed in companies or Government Sector | 16       | 29       | 18       |
| (X)  |          |          |          |
| No. of students admitted to higher studies with valid    | 12       | 24       | 24       |
| quantying scores   |          |          |          |
| (GATE or equivalent State or National Level Tests, GRE,  |          |          |          |
| GMAT etc.) (y)   |          |          |          |
| No. of students turned entrepreneur in                   | 1        | 1        | 5        |
| engineering/technology (z)                               | 1        | 1        | 5        |
| $\mathbf{x} + \mathbf{y} + \mathbf{z} =$                 | 29       | 54       | 47       |
| Placement Index : $(x + y + z)/N$                        | P1= 0.53 | P2= 0.81 | P3= 0.89 |
| Average placement= $(P1 + P2 + P3)/3$                    |          | 0.74     |          |
| Assessment Points = $30 \times$ average placement        |          | 22.23    |          |

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4.4a. Provide the placement data in the below mentioned format with the name of the program and the assessment year:

**Programs Name and Assessment Year** 

Table B.4.4 a Placement data

#### 2014-2018 Batch- Placement data

| S.<br>No | Name of the student placed | Enrollment no    | Name of the<br>employer  | Appointment<br>letter reference<br>no. with date |
|----------|----------------------------|------------------|--|--|
| 1        | Ambrish Adithiya H         | CB.EN.U4CIE14001 | <b>RMD Kwik Form</b><br>Site Assistance<br>Technician (SAT)          | RMD0951-<br>29.08.18                             |
| 2        | Arvind Kannan E            | CB.EN.U4CIE14007 | <b>Puravankara</b><br><b>Limited</b><br>Trainee – Engineer           | 30.11.18   |
| 3        | Balaji C S                 | CB.EN.U4CIE14010 | Junior Engineer<br>Amrita<br>Constructions,<br>Vijawada              | 20.08.18   |
| 4        | Ganesha Prabhu C           | CB.EN.U4CIE14016 | ASE at Accenture   | 11571650   |
| 5        | Goutham K M                | CB.EN.U4CIE14019 | Junior Engineer<br>Trainee <b>WABAG</b>                              | JET130618 -<br>30.05.18                          |
| 6        | Gowtham Raj P              | CB.EN.U4CIE14021 | Graduate Engineer<br>Trainee at<br>Shapoorji Pallonji<br>and Company | 01.08.18   |
| 7        | Kiren Raje S               | CB.EN.U4CIE14028 | Graduate Engineer<br>Trainee, Sobha<br>Hartland<br>Contracting LLC   | 07.10.18   |
| 8        | Koushik Raj S              | CB.EN.U4CIE14029 | Graduate Engineer<br>Trainee at<br>Shapoorji Pallonji<br>and Company | 01.08.18   |
| 9        | Manikandan M               | CB.EN.U4CIE14031 | Graduate Engineer<br>Trainee at <b>Sobha</b><br>LTD.                 | SLHRSS538-<br>09.08.18                           |
| 10       | Monish K                   | CB.EN.U4CIE14034 | Interning at<br>Econstruct design<br>and build                       | 20171212-<br>01.08.18                            |
| 11       | Mouries R D                | CB.EN.U4CIE14035 | Quality engineer at<br><b>Rpp infra projects</b><br><b>Itd</b>       | 10.04.18   |

| 12 | Raghavapriya S M  | CB.EN.U4CIE14044 | Application<br>Development<br>Associate at<br>Accenture              | 15.02.18    |
|----|-------------------|------------------|--|-------------|
| 13 | Sarath Sanjeev G  | CB.EN.U4CIE14049 | Junior Engineer at<br>Amrita<br>Constructions,<br>Vijawada           | 20.08.18    |
| 14 | Senthil Kumar S K | CB.EN.U4CIE14050 | Business<br>development<br>Associate at<br><b>BYJU'S</b>             | TNL21816146 |
| 15 | Siva Kavinesh K   | CB.EN.U4CIE14053 | Junior Engineer at<br>Amrita<br>Constructions,<br>Vijawada           | 20.08.18    |
| 16 | Swetha Krishna    | CB.EN.U4CIE14058 | Engineer trainee at<br>Geostructurals<br>Private limited<br>Thrissur | 27.02.19    |

# 2013-2017 Batch- Placement data

| S.  | Name of the       | Enrollment no      | Name of the         | Appointment<br>letter reference |
|-----|-------------------|--------------------|---------------------|---------------------------------|
| 110 | student placed    |                    | empioyer            | no. with date                   |
|     |                   |                    | Business analyst at |                                 |
| 1   | Abishek M         | CB.EN.U4CIE13001   | Techaffinity Pvt.   | E0383                           |
|     |                   |                    | Ltd                 |                                 |
| 2   | Adithya B         | CB.EN.U4CIE13002   | Kotak Mahindra      | 737841                          |
| 2   | Autiliya D        |                    | bank Bangalore      | 757641                          |
|     |                   | CB EN LIACIE 13009 | Programmer Analyst  |                                 |
| 3   | Arun Somasundaram |                    | Trainee cognizant   | 951347-                         |
| 5   | Sp                | CD.EN.04CIE15007   | Technology          | 08.12.16                        |
|     |                   |                    | Solutions           |                                 |
|     |                   |                    | Young Engineer at   | GETOI 006                       |
| 4   | Bavithran Okc     | CB.EN.U4CIE13013   | L&W Construction    | 30.03.17                        |
|     |                   |                    | Pvt. Ltd            | 50.05.17                        |
| 5   |                   |                    | Junior Structural   |                                 |
|     | Dhanya Unni       | CB EN U//CIE13015  | Engineer, Belhasa   | 10122017                        |
|     | Dhanya Unin       |                    | Six construct LLC,  | 17122017                        |
|     |                   |                    | Dubai               |                                 |

| 6  | Divya Prasad V           | CB.EN.U4CIE13016 | Senior Engineer at<br>L&T constructions,<br>Heavy civil<br>Infrastructure                    | 44921-19.07.17            |
|----|--------------------------|------------------|--|---------------------------|
| 7  | Elavarasi Era Su         | CB.EN.U4CIE13018 | Susnomics<br>Engineering Systems<br>India pvt.ltd  | 29.05.17                  |
| 8  | Hitha S                  | CB.EN.U4CIE13025 | Quill Design<br>Solutions Pvt. Ltd.<br>in Bangalore  | 02.04.18                  |
| 9  | Karthikeyan G            | CB.EN.U4CIE13031 | Technical officer<br>(Mkt) at <b>Bharathi</b><br><b>Cement Corp pvt ltd</b>                  | 10995                     |
| 10 | Kedarisetty<br>Priyatham | CB.EN.U4CIE13032 | Graduate Engineer<br>Trainee L&T heavy<br>Civil infrastructure<br>IC.                        | 44430-28.11.16            |
| 11 | Keerthana G              | CB.EN.U4CIE13033 | Engineer- Sustainable<br>development at<br>Susnomics<br>Engineering Systems<br>FZ LLC, Dubai | 23.09.17                  |
| 12 | Manasa K                 | CB.EN.U4CIE13035 | Software Engineer I -<br>Exceed Technology<br>Solutions Pvt Ltd                              | 3444                      |
| 13 | Mitesh D Doshi           | CB.EN.U4CIE13039 | Engineer Site-<br>Kamalam Builders<br>Chennai  | 01.02.18                  |
| 14 | Mukesh Kanna M           | CB.EN.U4CIE13041 | SKS Associates- Site<br>Engineer at<br>Coimbatore  | May 2016                  |
| 15 | Nishok Kumar E           | CB.EN.U4CIE13044 | Young Engineer<br>L&W Construction<br>Pvt. Ltd   | GET20170L097-<br>30.03.17 |
| 16 | Nivetha S                | CB.EN.U4CIE13045 | Engineer- Sustainable<br>development-<br>Susnomics<br>Engineering Systems<br>India pvt.ltd   | 30.09.17                  |
| 17 | Pradeep Gokul V          | CB.EN.U4CIE13046 | Programmer Analyst<br>trainee- Cognizant<br>Technology<br>Solutions                          | 9513453-<br>08.12.16      |

|    |                   |                  | 1  |                           |
|----|-------------------|------------------|--|---------------------------|
| 18 | Praveen Kumar T   | CB.EN.U4CIE13050 | Engineer Trainee,<br>Amrita Institute of<br>Medical Science &<br>Research Centre       | MTP0001-<br>01.12.17      |
| 19 | Rahul S S         | CB.EN.U4CIE13053 | Engineer Trainee,<br>Amrita Institute of<br>Medical Science &<br>Research Centre       | MTR0003-<br>01.12.17      |
| 20 | Ravichandran D    | CB.EN.U4CIE13055 | Graduate Engineer<br>Trainee- L&T<br>Constructions<br>Transportation<br>Infrastructure | GET2017165-<br>20.07.17   |
| 21 | Rizfana K         | CB.EN.U4CIE13057 | Engineer at L&W<br>Construction Pvt.<br>Ltd  | GET20170L098-<br>30.03.17 |
| 22 | Rohith V R        | CB.EN.U4CIE13058 | Graduate Engineer<br>Trainee- L&T<br>Constructions<br>Transportation<br>Infrastructure | 20136739                  |
| 23 | Saayinath N       | CB.EN.U4CIE13059 | Graduate Engineer<br>Trainee- L&T<br>Constructions<br>Transportation<br>Infrastructure | GET201718-<br>16.11.16    |
| 24 | Sandeep S         | CB.EN.U4CIE13060 | Trainee Engineer-<br>SITRA   | 3560                      |
| 25 | Shiv Shankhar R   | CB.EN.U4CIE13063 | Graduate Engineer<br>Trainee- L&T heavy<br>Civil infrastructure<br>IC.                 | GETAP144920-<br>19.07.17  |
| 26 | Sowmya S          | CB.EN.U4CIE13064 | Executive Trainee-<br>Kcp Limited  | 24.08.17                  |
| 27 | Swarnalakshmi K S | CB.EN.U4CIE13067 | Programmer Analyst<br>Trainee-<br><b>CTS,Chennai</b>                                   | 9995393-<br>08.12.16      |
| 28 | Ushanth Dev K     | CB.EN.U4CIE13069 | Programmer <b>Infosys</b><br>at Mysore   | 787955                    |
| 29 | Venkatachalam R   | CB.EN.U4CIE13070 | Engineer at Msteel<br>detailing Service,<br>Hosur                                      | SEPL7561718               |

| S.<br>No | Name of the student placed     | Enrollment no    | Name of the employer   | Appointment<br>letter<br>reference no.<br>with date |
|----------|--------------------------------|------------------|--|---|
| 1        | Bharatvaj L V                  | CB.EN.U4CIE12012 | Asst, Manager, Billing,<br>Amrita Institute of<br>Medical Science and<br>Research Center, Delhi            | MEP0032   |
| 2        | Hakesh P V                     | CB.EN.U4CIE12017 | Graduate engineer<br>trainee/ <b>L&amp;T</b><br>construction   | GET2016011-<br>19.01.16                             |
| 3        | Jagadeesan B<br>Kirubbanandhan | CB.EN.U4CIE12018 | Trainee decision<br>scientist/ <b>Mu sigma</b><br><b>business solutions</b>                                | 9056  |
| 4        | Karthick Raja C                | CB.EN.U4CIE12024 | Asst, Manager, Site<br>Execution, Amrita<br>Institute of Medical<br>Science and Research<br>Center, Delhi  | MEK0030-<br>01.08.16                                |
| 5        | Mansi Trivedi                  | CB.EN.U4CIE12029 | Program analyst trainee,<br>Congnizant Technology<br>Solutions   | 577620 –<br>29.07.16                                |
| 6        | Mukund S<br>Unnithan           | CB.EN.U4CIE12030 | Site engineer, L&T<br>transportation<br>infrastructures  | GET201601-<br>20.11.15                              |
| 7        | Pagalavan M                    | CB.EN.U4CIE12034 | Asst, Manager, Site<br>Execution, Amrita<br>Institute of Medical<br>Science and Research<br>Center, Delhi  | MEP0031-<br>01.08.16                                |
| 8        | Pinnamaraju<br>Varsha          | CB.EN.U4CIE12035 | Young Engineer, L&W  | GET20160L00<br>7-05.08.16                           |
| 9        | Prem A S                       | CB.EN.U4CIE12039 | Asst, Manager, Quality<br>Control, Amrita<br>Institute of Medical<br>Science and Research<br>Center, Delhi | MEP0032-<br>01.08.16                                |
| 10       | Rakesh Rao K M                 | CB.EN.U4CIE12042 | Asst, Manager, Site<br>Execution, Amrita<br>Institute of Medical<br>Science and Research<br>Center, Delhi  | MER0033-<br>01.08.16                                |

# 2012-2016 Batch- Placement data

| 11 | Ram R                      | CB.EN.U4CIE12043 | Infosys  | 17.09.15                  |
|----|----------------------------|------------------|--|---------------------------|
| 12 | Sahana N H                 | CB.EN.U4CIE12044 | Infosys  | 10810047-<br>07.02.2017   |
| 13 | Shanmuga Priya S<br>K      | CB.EN.U4CIE12047 | Program analyst trainee<br>Cognizant Technology<br>Solutions | 2992214                   |
| 14 | Thanu Suthan P M           | CB.EN.U4CIE12053 | Program analyst trainee<br>Cognizant Technology<br>Solutions | 8132268-<br>06.04.16      |
| 15 | Vignesh V                  | CB.EN.U4CIE12054 | Young Engineer, L&W  | GET20160L00<br>8-05.08.16 |
| 16 | Vinjam Manoj<br>Kumar      | CB.EN.U4CIE12056 | Interior designer at<br>Home Experts,<br>Bangalore           | -                         |
| 17 | Vishanth S                 | CB.EN.U4CIE12057 | Engineer Trainee at <b>EPMCR</b>                             | -                         |
| 18 | Vallambhotla Sai<br>Rajesh | CB.EN.U4CIE12060 | Software Developer at<br>I-exceed Technologies.              | 3370                      |
#### 4.5. Professional Activities

#### 4.5.1. Professional societies/chapters and organizing engineering events

**Amrita Civil Engineering Association (ACEA)** is actively involved in organising various events in association with Professional societies/chapters listed below.

- 1. Indian Concrete Institute (ICI) Student Chapter
- 2. Association of Consulting Civil Engineers (ACCE) India
- 3. American Society of Civil Engineers (ASCE) Student Chapter (inception stage).

The list of professional societies and their details are listed in Table B. 4.5.1(a)

| Professional Society   | Faculty Coordinator | Student Representatives  |
|--|---------------------|--|
| ACEA   | Mr.Ananthkumar      | Anurag A, Swetha P,Aaadhitya<br>M, Neeti Chandra A C                     |
| ICI Student Chapter  | Ms.V.Poornima       | Vishruthi M., Malarvizhi S<br>Adithan K, Sai Tarun I                     |
| ASCE Student Chapter<br>(Inception stage) Dr.Anil Kumar Sharma |                     | Ramganesh V, Lakshan C,<br>Vaishnao Vignesh G,Tyyagura<br>Laxmi Gayathri |

 Table B.4.5.1(a) List of Professional Societies in the department

The professional societies are mainly involved in organizing invited talks, workshops, technical events and identifying inter-institute events and encourage students to participate in them.

Events and workshops organized by Civil Engineering students as a part of **ANOKHA: AMRITA'S ANNUAL TECH FEST** are listed in Table B. 4.5.1(b)

| Sl<br>No | Event                 | Title  | Date               | Area                       |
|----------|-----------------------|--|--------------------|----------------------------|
| 1        | Quiz                  | Cerebra  | 19.02.2016         | Civil Engineering          |
| 2        | Technical Event       | Urban Eco Township<br>Planning   | 18.022016          | Management and<br>Planning |
| 3        | Workshop              | Bridge Design and<br>Building  | 18, 19.02.2016     | Bridge Engineering         |
| 4        | Technical Event       | Kill the Vibrations  | 19.022016          | Structural<br>Engineering  |
| 5        | Workshop              | Process design<br>Engineering  | 19, 20.02.2016     | Design Engineering         |
| 6        | Workshop              | Staad Pro  | 02.03.2017         | Design                     |
| 7        | Technical Event       | Concrete Master  | 02.03.2017         | Construction<br>Materials  |
| 8        | Technical Event       | ENIGMA   | 03.03.2017         | Surveying                  |
| 9        | Technical Event       | CAD-I-Tech   | 03.03.2017         | Design and Drawing         |
| 10       | Workshop              | BIM  | 22.02. 2018        | Construction<br>Management |
| 11       | Workshop              | Design Methodology<br>in VastuVidya for<br>Residential Buildings                                 | 23.02.2018         | Design and<br>Construction |
| 12       | Paper<br>Presentation | Libro Exegesis   | 23.02.2018         | Civil Engineering          |
| 13       | Technical Event       | CAD-Scamper  | 23.02.2018         | Design and Drawing         |
| 14       | Workshop              | BIM (Figure B.<br>4.5.1(a), (b), (c))  | 15, 16.02.<br>2019 | Construction<br>Management |
| 15       | Workshop              | Design Methodology<br>in VastuVidya for<br>Residential Buildings<br>(Figure B. 4.5.1(d),<br>(e)) | 14, 15.02.2019     | Design and<br>Construction |
| 16       | Paper<br>Presentation | Libro Exegesis   | 15.02.2019         | Civil Engineering          |
| 17       | Technical Event       | CAD-Scamper (Figure B. 4.5.1(f))   | 16.02.2019         | Design and Drawing         |
| 18       | Quiz                  | Squeeze it Up  | 14.02.2019         | Civil Engineering          |
| 19       | Technical Event       | Concrete Master  | 14.02.2019         | Construction<br>Materials  |
| 20       | Technical Event       | Popsicles  | 15.02.2019         | Bridge Engineering         |
| 21       | Technical Event       | Lustrago   | 16.02.2019         | Surveying                  |
| 22       | Technical Event       | Bob the Builder  | 15.02.2019         | Building Design            |

# Table B.4.5.1(b) List of events are workshops organized as part of Anokha.



Fig. B. 4.5.1(a) Poster of BIM Event, Anokha 2019



Fig. B. 4.5.1(b) Ms. Ema delivering the lecture during BIM Workshop, Anokha 2019



Fig. B. 4.5.1(c) Ms. Ema alongside participants of BIM Workshop, Anokha 2019



Fig. B. 4.5.1(d) Poster of Vaastu Event, Anokha 2019



Fig. B. 4.5.1(e) Dr. Balagopal alongside participants of Vaastu Workshop, Anokha 2019



Fig. B. 4.5.1(f) Poster of CAD Scamper Event, Anokha 2019

A list of events organized by the ICI and ACEA are enlisted in Table B. 4.5.1(c) A, B, C and D:

| SI<br>No | Industry Expert  | Торіс   | Date                       | Area                        | Organized<br>by |
|----------|--|---|----------------------------|-----------------------------|-----------------|
| 1        | <b>Dr. Sharad Kelkar,</b><br>Hydrologist, Los Alamos<br>National Laboratory  | Interaction session for faculty and students  | 09.06.2015                 | -                           | ACEA            |
| 2        | <b>Mr. Jayakrishnan</b><br><b>Menon,</b> Geotechnical<br>Consultant.   | Deep basement<br>construction design<br>and planning:<br>Structural and<br>Geotechnical<br>perspective      | 10.09.2015                 | Geotechnical<br>Engineering | ACEA            |
| 3        | <b>Dr. K. P. Soman</b> , CEN,<br>Amrita Vishwa<br>Vidyapeetham, Ettimadai.   | Application of<br>MATLAB in Civil<br>Engineering  | 16.09.2015                 | Civil<br>Engineering        | ACEA            |
| 4        | <b>Dr. Marty</b> , University of Columbia  | Interaction with the faculty and students   | 05.10.2015                 | -                           | ACEA            |
| 5        | National Mission on<br>Education through ICT<br>(MHRD, Govt. of India)<br>tied up with IIT-<br>Kharagpur   | Introduction of<br>Structural Engineering   | 04.01.2016 –<br>09.01.2016 | Structural<br>Engineering   | ACEA            |
| 6        | Dr. Vellore S.<br>Gopalaratnam,<br>Professor, University of<br>Missouri, USA   | Fracture Mechanics of<br>Concrete   | 11,12.01.2016              | Structural<br>Engineering   | ACEA            |
| 7        | Dr. Darren Chian Siau<br>Chen, NUS, Singapore,<br>and Dr. Allen<br>Bateman, Universitat<br>Politècnica de Catalunya,<br>Spain as Keynote<br>Speakers | International<br>conference on<br>Emerging and<br>sustainable<br>technologies for<br>infrastructure systems | 22,23.04.2016              | Structural<br>Engineering   | ACEA            |
| 8        | <b>Er. A. Sudhahar</b> , Chief<br>Consultant of<br>Dimensions, Coimbatore  | Durability of concrete  | 06.08.2015                 | Structural<br>Engineering   | ACEA/<br>ICI    |
| 9        | <b>Dr. C. Jayasree</b> ,<br>Associate Research<br>Scientist, Kuwait Institute<br>for Scientific Research,<br>Kuwait.                                 | Rheology of cement<br>paste   | 11.08.2015                 | Structural<br>Engineering   | ACEA/<br>ICI    |
| 10       | <b>Dr. L. S. Jayagopal</b> ,<br>Managing Director –<br>Mithran Structures-<br>Structural Consultant,<br>Coimbatore.                                  | Steel Structures  | 13.08.2015                 | Structural<br>Engineering   | ACEA/<br>ICI    |
| 11       | <b>Col. Jacob G Podipara</b> ,<br>Professor, CIT.  | Construction in<br>Challenging terrain<br>conditions  | 19.09.2015                 | Structural<br>Engineering   | ACEA/ICI        |

Table B. 4.5.1(c) Invited Talks and WorkshopsA. AY 2015-2016

B. AY 2016-2017

| Sl<br>No | Industry Expert   | Торіс  | Date        | Area                         | Organized<br>by |
|----------|---|--|-------------|------------------------------|-----------------|
| 1.       | <b>Mr. Roger Kessinger</b> ,<br>CEO, Kessinger<br>Publishing, LLC   | Technical knowledge<br>transfer to Villages –<br>Live-in-Labs Case<br>Studies                        | 10.08.2016  | Live – in - Lab              | ACEA            |
| 2.       | Dr. Suresh Kumar,<br>Senior Wind Engineering<br>Consultant & Managing<br>Director, RWDI<br>Consulting Engineers<br>(India) Pvt Ltd.,<br>Trivandrum Senior Wind<br>Engineering Consultant<br>& Managing Director | Wind effects on structures   | 05.10.2016  | Structural<br>Engineering    | ACEA            |
| 3.       | <b>Mr. S. Sriram</b> Green<br>Buildings (Chennai)   | Seminar on LEED<br>Education (Green<br>Buildings)  | 27.10. 2016 | Building<br>Technology       | ACEA            |
| 4        | Mr. Gowrishankar<br>Rajaramanan, Mr. S.<br>Sriram, Mr. N. Karthik   | LEED Education<br>(Green Buildings)  | 25.01. 2017 | Building<br>Technology       | ACEA            |
| 5.       | <b>Prof. Jayaraman K,</b> CIR,<br>Amrita Vishwa<br>Vidyapeetham   | Instrumentation<br>aspects of Structural<br>Health Monitoring in<br>Structures                       | 27.02. 2017 | Structural<br>Engineering    | ACEA            |
| 6.       | Mr. Pradeep Kumar,<br>Deputy chief<br>engineer/Planning/Constru<br>ction,<br>Indian Railways, Chennai   | Opportunities for<br>Civil Engineers<br>(including IES) and<br>role of Civil<br>Engineers in Railway | 11.03. 2017 | General Civil<br>Engineering | ACEA            |
| 7.       | Mr. G. Arumuga<br>Perumal, Manager-<br>Technical, RMC Ready<br>Mix(India) Chennai   | Special Concrete for<br>better construction  | 05.08. 2016 | Construction<br>Materials    | ACEA/ICI        |
| 8.       | <b>Er. Sudhakar</b> , Chief<br>Consultant -Dimensions,<br>Coimbatore  | Sustainability   | 06.10. 2016 | Structural<br>Engineering    | ACEA/ICI        |
| 9.       | <b>Er. B. Suresh,</b> Sr.<br>Technical Manager,<br>Chettinad Cements  | Precast Concrete   | 08.03. 2017 | Structural<br>Engineering    | ACEA/ICI        |

## C. AY 2017-2018

| Sl<br>No | Industry Expert Topic  |  | Date       | Area  | Organized<br>By |
|----------|--|--|------------|---|-----------------|
| 1.       | <b>Prof. T. G. Sitharam</b> ,<br>& <b>Dr. K. Sreevalsa,</b><br>Amrita Team, NITK , CIFT                        | International<br>Workshop on Coastal<br>Reservoirs Research<br>Project Review<br>meeting of Feasibility<br>studies of Coastal<br>reservoir across<br>Netravathi River<br>(BWSSB) | 19.07.2017 | Water<br>resource<br>Engineering                    | ACEA            |
| 2.       | <b>Mr. Dinesh Raja</b> , BIM<br>Consultancy  | hesh Raja, BIM<br>ancy Faculty Development<br>Programme for Staffs ,<br>BIM  |            | Structural<br>Engineering                           | ACEA            |
| 3.       | Dr. Bindumadhava Aery,<br>Dr. Darren Chian Siau<br>Chen,<br>Dr. Anil kumar Sharma,<br>Dr. Sreevalsa Kolathayar | One day international<br>workshop on<br>geotechnics for<br>infrastructure  | 03.01.2018 | Geotechnical<br>Engineering                         | ACEA            |
| 4.       | <b>Dr. Ravi Karangat</b> , IIT<br>Guwahati   | Geo Energy Systems   | 24.01.2018 | Geotechnical<br>and<br>Environmental<br>Engineering | ACEA            |
| 5.       | <b>G.V.S Reddy</b> , CEO<br>Adithya Projects,<br>Hyderabad   | Vaastu in<br>Construction  | 09.02.2018 | Building<br>Technology                              | ACEA            |
| 6.       | Dr. E. Sreedharan  | Excellence in<br>Engineering<br>Profession   | 26.02.2018 | -   | ACEA            |
| 7.       | <b>Dr. S. Kalirajan</b> , L& T,<br>Chief Engineer,.  | Construction<br>Management &<br>Practical issues   | 15.09.2017 | Construction<br>Management                          | ACEA/ICI        |
| 8.       | <b>Dr. S. Kalirajan</b> , L& T,<br>Chief Engineer, Chennai.  | Prefabricated<br>Structures  | 15.09.2017 | Structural<br>Engineering                           | ACEA/ICI        |
| 9.       | Mr. Sreekumar Head –<br>Corporate, B&F IC, L&T<br>Construction (ICI)   | Precast Structures   | 22.03.2018 | Structural<br>Engineering                           | ACEA/ICI        |

| <b>D.</b> AY 20 | )18-2019 |
|-----------------|----------|
|-----------------|----------|

| Sl<br>No | Industry Expert   | Торіс   | Date                 | Area                        | Organized<br>By |
|----------|---|---|----------------------|-----------------------------|-----------------|
| 1.       | Dr. R. K. Bhandari,<br>Prof. T. G. Sitharam,<br>Dr. Sreevalsa<br>Kolathayar   | One-day workshop on<br>Earthquake Hazard<br>Risk and Mitigation   | 10.08.2018           | Geotechnical<br>Engineering | ACEA            |
| 2.       | <b>Er. Ravikumar,</b> Chief<br>Resident Engineer,<br>Dubai (ICI)  | High Rise<br>Construction,<br>Methodologies and<br>Challenges   | 13.08.18             | Structural<br>Engineering   | ACEA/ICI        |
| 3.       | Er. Subir Das,<br>Professor Vellore S.<br>Gopalaratnam,<br>Er. Inki Choi,<br>Er. Tsoukantas G<br>Spyridon, Er.<br>Topintzis D. Tryfon,<br>Er. S. Sathiyaseelan. | International Seminar<br>on precast prestressed<br>concrete for<br>infrastructure<br>applications<br>opportunities and<br>challenges in the<br>Indian contest | 20 and<br>21.12.2018 | Structural<br>Engineering   | ACEA/ICI        |

### 4.5.2. Publication of technical magazines, newsletters, etc.

 Kriyaashakthi – "Engineer's day" Magazine published by ICI Student Chapter (Fig.B.4.5.2(a))

### Faculty Coordinator: Ms. Poornima V.



Fig.B.4.5.2(a) Kriyaashakthi Magazine

- 2. AmritaDhwani An annual magazine published by the University
- 3. EnVision University Newsletter

### 4.5.3 Participation in inter-institute events by students of the program of study

A list of inter institute events in which students participated are enlisted in Table B. 4.5.3(a)

A, B, C and D and the students exchange programs are listed in Table B. 4.5.3(b)

## Table B.4.5.3(a) List of participants in inter institute events

## A. AY 2015-16

| Sl<br>No. | Name                | Roll No.         | Event/Conference/Symposi<br>um/Workshop                              | Date      | Remarks   |
|-----------|---------------------|------------------|--|-----------|---|
|           | Vignesh .V          | CB.EN.U4CIE12054 |  |           |   |
|           | Satish A. J.        | CB.EN.U4CIE12046 | Coimbatore Builders &  |           | First Prize,  |
| 1         | Thanusuthan P. M    | CB.EN.U4CIE12053 | Contractors Association $(CEBACA)$ Talent Hunt                       | 10-11-15  | Cash Prize of   |
|           | Mansi Trivedi       | CB.EN.U4CIE12029 | 2015, Coimbatore   |           | Rs. 75000   |
|           | Varsha P            | CB.EN.U4CIE12035 |  |           |   |
|           | Dhanya N            | CB.EN.U4CIE12014 |  |           |   |
|           | Rajaram V           | CB.EN.U4CIE12041 | Concrete Canoe   |           |   |
|           | Kosika S. M         | CB.EN.U4CIE12028 | Competition,   |           |   |
|           | Keerthana J. R      | CB.EN.U4CIE12026 | `NCCC'15 at IIT Madras   |           |   |
|           | Prem A. S           | CB.EN.U4CIE12039 |  |           | Finished in the   |
|           | Varsha P            | CB.EN.U4CIE12035 |  |           | top 8 finalists   |
| 2         | Thanusuthan P. M    | CB.EN.U4CIE12053 |  | 21/8/2015 | from all over<br>India.<br>Runner up,<br>Cash Prize of<br>Rs. 34000 |
| 2         | Abilash B.          | CB.EN.U4CIE12001 | Concrete Canoe<br>Competition, 'NCCC'15 at<br>IIT Madras             |           |   |
|           | Vishanth S.         | CB.EN.U4CIE12057 |  |           |   |
|           | Sudhirnath V        | CB.EN.U4CIE12048 |  |           |   |
|           | Pulumati Varun      | CB.EN.U4CIE12040 |  |           |   |
|           | Pagalavan.M         | CB.EN.U4CIE12034 |  |           |   |
|           | Manoj.V.            | CB.EN.U4CIE12056 |  |           |   |
|           | Mansi Trivedi       | CB.EN.U4CIE12029 |  |           |   |
| 3         | Dhanya N            | CB.EN.U4CIE12014 | Master Builder Event, CEA  | 13-03-15  | First Prize   |
| 0         | Gowtham R           | CB.EN.U4CIE13022 | Fest' 15, IIT Madras   | 15 05 15  | 1 1 50 1 1 1 20   |
|           | Kaarthik Krishna N. | CB.EN.U4CIE13028 |  |           |   |
|           | Thanusuthan P. M.   | CB.EN.U4CIE12053 |  |           |   |
| 4         | Pagalavan M         | CB.EN.U4CIE12034 | Aquanomics Event, CEA<br>Fest' 15 IIT Madras                         | 13-03-15  | First Prize   |
|           | Bharatvaj L. V.     | CB.EN.U4CIE12012 |  |           |   |
|           | Mr. Abilash B.      | CB.EN.U4CIE12001 |  |           |   |
| 5         | Shudhirnath V. G    | CB.EN.U4CIE12048 | Sustainable Design   | 12 02 15  | Third Drize   |
| 5         | Vishanth S.         | CB.EN.U4CIE12057 | 15. IIT Madras   | 15-05-15  | Third Flize   |
|           | Pulumati Varun      | CB.EN.U4CIE12040 |  |           |   |
| 6         | Sathish A. J.       | CB.EN.U4CIE12046 | Workshop on Seismic<br>Design with Demonstration,<br>CIT, Coimbatore | 01-12-15  | Participation   |

| 7  | Anagha Ramadas          | CB.EN.U4CIE12005 | Running 400m, 1500m &<br>3000m at Intercollege sports<br>meet at Manipal University  |                    | Second Prize  |
|----|-------------------------|------------------|--|--------------------|---------------|
|    | John Jesuran J          | CB.EN.U4CIE14024 |  |                    |               |
| 8  | Sree Mukund C. V.       | CB.EN.U4CIE14055 | Workshop on Forensic<br>Engineering of Structures,<br>CIT, Coimbatore  | 09-01-15           | Participation |
|    | Aravindh<br>Sabarish R. | CB.EN.U4CIE14005 |  |                    |               |
| 9  | G. Karthikeyan          | CB.EN.U4CIE13031 | Paper presentation during<br>ICT FEST - ICI, SRM<br>University, Chennai  | 09-01-15           | First Prize   |
|    | G. Karthikeyan          | CB.EN.U4CIE13031 | Mortar Master event  |                    | Participation |
| 10 | Arun<br>Somasundaram    | CB.EN.U4CIE13009 | organized by Pragyan, the international Techno -   | 25.4               | Second Prize  |
|    | Praveen<br>Karthikeyan  | CB.EN.U4CIE13049 | Management organization of National Institute of   | 25 to<br>28.2.2016 | Third Prize   |
|    | Nishok E.               | CB.EN.U4CIE13044 | Technology,  |                    | Third Prize   |
|    | Ravichandran D          | CB.EN.U4CIE13055 | Thiruchirappalli   |                    | Third Prize   |
|    | Nitishkumar M.          | CB.EN.U4CIE14039 |  |                    | Participation |
|    | Varsha Nair             | CB.EN.U4CIE14060 |  |                    |               |
|    | Aswathi G Krishnan      | CB.EN.U4CIE14009 | Foundation Analysis and<br>design Workshop organized<br>by Pragyan, the international<br>Techno - Management<br>organization of National<br>Institute of Technology,<br>Thiruchirappalli |                    |               |
|    | Suja .P                 | CB.EN.U4CIE14056 |  |                    |               |
| 11 | Thiviya S K             | CB.EN.U4CIE14059 |  | 25 to              |               |
|    | Swetha Krishna          | CB.EN.U4CIE14058 |  | 28.2.2016          |               |
|    | Aswath Maharaja<br>KM   | CB.EN.U4CIE14008 |  |                    |               |
|    | Prabha B                | CB.EN.U4CIE14040 |  |                    |               |
|    | Anagha Murali           | CB.EN.U4CIE14004 |  |                    |               |
|    | Nisanth ES              | CB.EN.U4CIE14038 |  |                    |               |
|    | Manikandan M            | CB.EN.U4CIE14031 |  |                    |               |
|    | Vinithan K S            | CB.EN.U4CIE14061 |  |                    |               |
|    | Goutham K M             | CB.EN.U4CIE14019 |  |                    |               |
|    | Harishkumar P           | CB.EN.U4CIE14023 | Green building workshop at   |                    |               |
|    | Senthil Kumar S K       | CB.EN.U4CIE14050 | official zonal centre IIT  |                    |               |
| 12 | Ajay Arumugam K         | CB.EN.U4CIE14002 | madras, organized by ARK   | 5.3.2016 to        | Participation |
|    | Goutham G               | CB.EN.U4CIE14018 | Technosolutions & robokart   | 6.3.2016           | <b>I</b>      |
|    | Samyuktha Sathish       | CB.EN.U4CIE14048 | CEAFest 2016. IIT Madras.  |                    |               |
|    | R Shruthi               | CB.EN.U4CIE14051 |  |                    |               |
|    | Kiren Raje S            | CB.EN.U4CIE14028 |  |                    |               |
|    | Aswath Maharaja<br>KM   | CB.EN.U4CIE14008 |  |                    |               |
|    | Prasanth K              | CB.EN.U4CIE14042 | 1  |                    |               |

| 13 | G. Karthikeyan                   | CB.EN.U4CIE13031                     | Paper presentation, National<br>level Technical Symposium<br>Sri Shanmugha College of<br>Engineering and technology,<br>Department of civil<br>engineering                                  | 26.9.2015           | Second Prize  |
|----|----------------------------------|--------------------------------------|---|---------------------|---------------|
| 14 | G. Karthikeyan                   | CB.EN.U4CIE13031                     | Publication of Manuscript in<br>the proceedings of ICRTE -<br>2015, International Institute<br>for research and<br>development in Engineering<br>and Management                             | 24.10.2015          | Participation |
| 15 | G. Karthikeyan                   | CB.EN.U4CIE13031                     | Code Cracking, National<br>level Technical Symposium<br>Sri Shanmugha College of<br>Engineering and technology,<br>Department of civil<br>engineering                                       | 26.9.2015           | Second Prize  |
| 16 | Ravichandran D<br>Keerthana J. R | CB.EN.U4CIE13055<br>CB.EN.U4CIE13033 | Presented a paper in the<br>International conference on<br>emerging and sustainable<br>technology system,<br>organized by Department of<br>civil engineering, Amrita<br>Vishwa Vidyapeetham | 22 to<br>23.4.2016  | Participation |
| 17 | Ravichandran D                   | CB.EN.U4CIE13055                     | Indian engineering<br>Olympiad exam   | 21.2.2016           | 8th rank      |
| 18 | Ravichandran D                   | CB.EN.U4CIE13055                     | Intra mural competition in<br>kabadi organized by Amrita<br>Vishwa Vidyapeetham<br>Coimbatore   | 26.02.2016          | Runner up     |
| 19 | Nitish Kumar                     | CB.EN.U4CIE14039                     | Walk In Event of<br>Civilisation '16, organized<br>by the society of civil<br>engineering, CEG, Anna<br>university,   | 25 to<br>27.03.2016 | Participation |
| 20 | Anagha Murali                    | CB.EN.U4CIE14004                     | PRIMAMETRY Event of<br>Civilisation '16, organized<br>by the society of civil<br>engineering, CEG, Anna<br>university,  | 25 to<br>27.03.2016 | Third Prize   |
| 21 | Prashath S                       | CB.EN.U4CIE15040                     | Intra mural competitions in<br>hockey organized by Amrita<br>Vishwa Vidyapeetham  | 26.2.2016           | Winner        |
| 22 | V Saran Raaj                     | CB.EN.U4CIE15052                     | Intra mural competition in<br>badminton organized by<br>Amrita Vishwa<br>Vidyapeetham Coimbatore  | 26.02.2016          | Winner        |

| 23 | Prabha B | CB.EN.U4CIE14040 | National level Workshop on<br>ENGINEERED<br>CONCRETE FOR<br>SUSTAINABILITY In<br>CARVE 16 A National level<br>technical symposium<br>conducted by department of<br>civil engineering , Sona<br>College Of Technology. | 23.03.2016 | Participation |
|----|----------|------------------|---|------------|---------------|
|----|----------|------------------|---|------------|---------------|

## **B.** AY 2016-17

| Sl<br>No. | Name                |                  | Event/Conference/Sympos<br>ium/Workshop   | Date      | Remarks   |
|-----------|---------------------|------------------|---|-----------|---|
| 1         | N. Kaarthik Krishna | CB.EN.U4CIE13028 | Paper presentation,<br>Conference, ICONAMMA   | 14/7/2016 | Publication in<br>Scopus indexed                |
|           | S.Sandeep           | CB.EN.U4CIE13060 | 2016, Amrita Vishwa<br>Vidyapeetham, Bangalore  |           | proceedings                                     |
| 2         | K Praveen           | CB.EN.U4CIE13049 | Paper Presentation,<br>Conference, ICONAMMA<br>2016, Amrita Vishwa<br>Vidyapeetham, Bangalore | 14/7/2016 | Publication in<br>Scopus indexed<br>proceedings |
|           | Keerthana G.,       | CB.EN.U4CIE13033 | Symposium, Engineering  |           |   |
| 2         | Akshaya A           | CB.EN.U4CIE13006 | Applications to solve   | 10.05.16  | First Prize, Cash                               |
| 3         | Dhanya Unni         | CB.EN.U4CIE13015 | human problems on Water,  | 10-05-16  | Prize of Rs. 2000                               |
|           | Mitesh Doshi        | CB.EN.U4CIE13039 | Karunya University  |           |   |
|           | Nivetha             | CB.EN.U4CIE13045 | а   |           |   |
| 4         | Ravichandran D      | CB.EN.U4CIE13055 | Symposium, Engineering  | 10-05-16  |   |
|           | Rohith. V. R        | CB.EN.U4CIE13058 | Applications to solve   |           | First Prize, Cash                               |
|           | Swarnalakshmi       | CB.EN.U4CIE13067 | human problems on Shelter,  |           | Flize of Ks. 2000                               |
|           | Mitesh Doshi        | CB.EN.U4CIE13039 | Karunya University  |           |   |
| 5         | Saranraaj V         | CB.EN.U4CIE15052 | National Ultimate Frisbee<br>Tournament, Mysore<br>University                                 | 19/8/2016 | Participation                                   |
|           | Bharath kumar S. S. | CB.EN.U4CIE15015 |   |           |   |
|           | Arun Somasundaram   | CB.EN.U4CIE13009 | Ball Badminton in Inter   | 08-12-16  | First Prize                                     |
| 6         | Abisek M            | CB.EN.U4CIE13001 | A meito Michauo   |           |   |
|           | Gowthaman .L. R.    | CB.EN.U4CIE13023 | Vidvapoethem  |           |   |
|           | Ushanth Dev         | CB.EN.U4CIE13069 | Vidyapeethani   |           |   |
|           | Monish K            | CB.EN.U4CIE14034 | Intercampus Hockey  |           |   |
| 7         | Prasanth            | CB.EN.U4CIE14042 | tournament at Amritapuri<br>Campus, Amrita Vishwa<br>Vidyapeetham, Kollam                     | 09-08-16  | Participation                                   |
|           | Gowthaman .L. R.    | CB.EN.U4CIE13023 | Intercampus tournament,   |           |   |
| 8         | Gowtham R           | CB.EN.U4CIE13022 | Bangalore, Amrita Vishwa<br>Vidyapeetham  | 12-12-16  | Participation                                   |
| 9         | Rohith. V. R        | CB.EN.U4CIE13053 | Workshop, Corrosion<br>control in concrete<br>structures, IIT Madras                          | 08-05-16  | Participation                                   |
| 10        | Krishnaraj R.       | CB.EN.U4CIE15028 | Event, Kalakkal Gallata,  | 23/0/2016 | Participation                                   |
| 10        | Gowri Shankar V.    | CB.EN.U4CIE15020 | NIT Trichy.   | 23/9/2010 |   |
| 11        | Devuni Pranesh      | CB.EN.U4CIE15017 | Event, Coding, NIT Trichy.  | 23/9/2016 | Participation                                   |

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|     | Kodangal Param Jeet       | CB.EN.U4CIE15026  |                             |                              |  |               |
|-----|---------------------------|-------------------|-----------------------------|------------------------------|--|---------------|
|     | Naginoni Pranay Pao       | CR EN LIACIE15033 |                             |                              |  |               |
|     | Keerthana G               | CB EN LUCIE13033  |                             |                              | Participated and                         |               |
| 12  | Keerunana O.              | CD.EN.04CIE15055  | Event, Quiz, CADD Centre,   | 11-06-16                     | reached Semi-                            |               |
| 12  | Sruthy. R                 | CB.EN.U4CIE14051  | Chennai                     | 11-00-10                     | Finals                                   |               |
|     | Mouries                   | CB.EN.U4CIE14035  | Summosium of CIT            |                              |  |               |
| 13  | Koushik                   | CB.EN.U4CIE14029  | Symposium at CI1,           | 27/1/2017                    | Participation                            |               |
|     | Ganesh Prabhu             | CB.EN.U4CIE14016  | Connoatore                  |                              |  |               |
|     |                           |                   | Volley Ball in Inter campus | 6.11.2016                    |  |               |
| 14  | Shalini R                 | CB.EN.U4CIE16042  | Tournament, Amrita          | to                           | Winner                                   |               |
|     |                           |                   | Vishwa Vidyapeetham         | 7.11.2016                    |  |               |
|     |                           |                   | Mini marathon in Inter      |                              |  |               |
| 15  | Shalini R                 | CB.EN.U4CIE16042  | campus Tournament,          | 15.11.201                    | Participation                            |               |
| 10  |                           | 02020100100000    | Amrita Vishwa               | 6                            | 1 an |               |
|     |                           |                   | Vidyapeetham                |                              |  |               |
|     |                           |                   | Inter college Literary      |                              |  |               |
| 16  | Vivek T                   | CB.EN.U4CIE15066  | Competition, Amrita         | 7.9.2016                     | Participation                            |               |
|     |                           |                   | Vishwa Vidyapeetham         |                              |  |               |
|     | Vivek T CB.EN.U4CIE15     |                   | Advaiya 2016 - The annual   |                              |  |               |
| 17  |                           |                   | theatre fest, Organized by  | 24 to 26                     | D  |               |
| 17  |                           | Vivek T CB.EN.U   | CB.EN.U4CIE15066            | Srishti - The literart club, | .10.2016                                 | Participation |
|     |                           |                   | Amrita Vishwa               |                              |  |               |
|     |                           |                   | Vidyapeetham                |                              |  |               |
|     |                           |                   | Ball Badminton in Inter     |                              |  |               |
| 18  | Arun Somasundaram         | CB.EN.U4CIE13009  | campus Tournament,          | 2016-2017                    | Best player                              |               |
|     |                           |                   | Amrita Visnwa               |                              |  |               |
|     | Niconth ES                | CR EN LIACIE14038 | Workshop on Food service    |                              |  |               |
|     | INISaliul ES              | CD.EN.04CIE14038  | management and Dietetics    | 21 22 4 20                   |  |               |
| 19  | Goutham G CB.EN.U4CIE1401 | CB EN U4CIE14018  | Amrita Vishwa               | 17                           | Participation                            |               |
|     |                           | CD.LIV.O+CIL1+010 | Vidvapeetham                | 17                           |  |               |
|     | Goutham G                 | CB EN U4CIE14018  | Detour Event of             |                              |  |               |
|     |                           |                   | Civilisation '17. organized |                              |  |               |
| 20  |                           |                   | by the society of civil     | 16 to                        | First prize                              |               |
|     | Nitishkumar M.            | CB.EN.U4CIE14039  | engineering. CEG. Anna      | 18.3.2017                    | F  |               |
|     |                           |                   | university,                 |                              |  |               |
|     |                           |                   | SAP - Workshop organized    |                              |  |               |
|     |                           |                   | The national level          |                              |  |               |
| 0.1 |                           |                   | Technical symposium of      | 10.2.2017                    | D  |               |
| 21  | VIVEK I                   | CB.EN.04CIE15066  | the Department of civil     | 18.3.2017                    | Participation                            |               |
|     |                           |                   | engineering. NIT,           |                              |  |               |
|     |                           |                   | Tiruchirappalli.            |                              |  |               |
|     | Vinithan K S              | CB.EN.U4CIE14061  |                             |                              |  |               |
|     | Swetha Krishna            | CB.EN.U4CIE14058  | 3D Printing workshop, The   | 30 to                        |  |               |
|     | Varsha Nair               | CB.EN.U4CIE14060  | National Level Techno       | 01 10 201                    | Participation                            |               |
| 22  | Tamilarasi G              | CB.EN.U4CIE14063  | Management Fest of SRM      | 6                            | i articipation                           |               |
|     | Aswathi G Krishnan        | CB.EN.U4CIE14009  | University, Kattanukulathur |                              |  |               |
|     | Balaji C S                | CB.EN.U4CIE14010  | Campus, Chennai.            |                              |  |               |
|     | P Suja                    | CB.EN.U4CIE14056  |                             | 9to                          |  |               |
| 23  | Aravind Siddaarth B       | CB EN U4CIE13008  | Intercampus Hockey          | 10.9.2016                    | winner                                   |               |
| 25  | S                         |                   | tournament at Amritapuri    | 10.7.2010                    |  |               |

|    | NGL-1 S                     | CD EN LIACIE12042           | Campus, Amrita Vishwa     |                    |               |
|----|-----------------------------|-----------------------------|---------------------------|--------------------|---------------|
|    | INIKII S                    | CD.EN.04CIE13045            | Vidyapeetham, Kollam      |                    |               |
|    | Divya Prasad V              | CB.EN.U4CIE13016            | Intercompusition disall   |                    |               |
|    | Nishok Kumar E              | CB.EN.U4CIE13044            | tournement of Coimbatore  | 12 to              |               |
| 24 | John Jesuran J              | CB.EN.U4CIE14024            | Commune America Vishaus   | 12 10              | Runner up     |
|    | Sanjaykirann C K            | CB.EN.U4CIE13061            | Vi duon o othorn          | 15.8.2010          |               |
|    | Gowtham Raj P               | CB.EN.U4CIE14021            | vidyapeetnam.             |                    |               |
|    |                             |                             | Intercampus badminton     |                    |               |
| 25 | NG D'                       | OD EN LIACIE 1 5050         | tournament at Coimbatore  | 12 to              | XX /·         |
| 25 | V Saran Raaj                | CB.EN.U4CIE15052            | Campus, Amrita Vishwa     | 15.8.2016          | Winner        |
|    |                             |                             | Vidyapeetham              |                    |               |
|    |                             |                             | Intercampus football      |                    |               |
| 26 | D'11 A                      | OD EN UACIE 15045           | tournament at Coimbatore  | 12 to              | XX /·         |
| 26 | Rajashekar A                | CB.EN.U4CIE15045            | Campus, Amrita Vishwa     | 15.8.2016          | Winner        |
|    |                             |                             | Vidyapeetham              |                    |               |
|    |                             |                             | Intercampus swimming      |                    |               |
|    |                             |                             | competition 400 m,1500 m, | 14.00.001          |               |
| 27 | Goutham G                   | CB.EN.U4CIE14018            | at Coimbatore Campus,     | 14.08.201          | Second Prize  |
|    |                             |                             | Amrita Vishwa             | 6                  |               |
|    |                             |                             | Vidyapeetham.             |                    |               |
|    |                             |                             | Ball Badminton in Inter   |                    |               |
| 28 |                             |                             | campus Tournament,        | 15.08.201          | 1 . 1         |
|    | Arun Somasundaram           | CB.EN.U4CIE13009            | Amrita Vishwa             | 6                  | best player   |
|    |                             |                             | Vidyapeetham              |                    |               |
|    | Nitishkumar M.              | CB.EN.U4CIE14039            | Log IQ workshop, Thathva  | 21.                |               |
| 20 | Nisanth ES CB.EN.U4CIE14038 | conducted by National       | 21 to                     | D                  |               |
| 29 |                             | Nisanth ES CB.EN.U4CIE14038 | institute of technology,  | 23.10.201          | Participation |
|    |                             |                             | Calicut.                  | 6                  |               |
|    | Nitishkumar M.              | CB.EN.U4CIE14039            | Descartes's square        |                    |               |
|    |                             |                             | workshop, Thathva         | 21 to              |               |
| 30 | Nisanth ES CB.EN.U4CIE14038 |                             | conducted by National     | 23.10.201          | Participation |
|    |                             | NISANTH ES CB.EN.U4CIE14038 | institute of technology,  | 6                  | -             |
|    |                             | Calicut.                    |                           |                    |               |
|    | Nitishkumar M.              | CB.EN.U4CIE14039            | Mela workshop, Thathva    | 21.4               |               |
| 21 | Nisanth ES                  | CB.EN.U4CIE14038            | conducted by National     | 21 to              | Destisientien |
| 31 | D 11                        |                             | institute of technology,  | 23.10.201          | Participation |
|    | Prabha                      | CB.EN.U4CIE14040            | Calicut.                  | 0                  |               |
|    | Nitishkumar M.              | CB.EN.U4CIE14039            | CAD Art workshop,         | 21.4               |               |
| 22 | Nisanth ES                  | CB.EN.U4CIE14038            | Thathva conducted by      | 21  to             | Dantiainatian |
| 32 | D 11.                       |                             | National institute of     | 23.10.201          | Participation |
|    | Praona                      | CB.EN.04CIE14040            | technology, Calicut.      | 0                  |               |
|    | _                           |                             | Pottery workshop, Thathva | 21.40              |               |
| 22 | Nitichlanmon M              | CD EN LIACIE 14020          | conducted by National     | 21 l0<br>22 10 201 | Dortion       |
| 33 | Nitishkumar M.              | CD.EIN.04CIE14039           | institute of technology,  | 23.10.201          | Participation |
|    |                             |                             | Calicut.                  | 0                  |               |
|    |                             |                             | Popsicle ride, Thathva    | 01 to              |               |
| 24 | Nitichlanmon M              | CD EN LIACIE 14020          | conducted by National     | 21 l0<br>22 10 201 | Dortion       |
| 34 | INITISHKUHIAT IVI.          | CD.EIN.U4CIE14039           | institute of technology,  | 23.10.201<br>6     | rancipation   |
|    |                             |                             | Calicut.                  | U                  |               |

# C. AY 2017-18

| Mouries         CB EN U4CIE 14025<br>Koushik         Symposium, CIT,<br>Coimbatore         Participation           1         Mouries         CB EN.U4CIE 14029<br>Ganesh Prabhu         Symposium, CIT,<br>Coimbatore         Participation           2         Ravichandran D         CB EN.U4CIE 14025<br>Mishok E.         Event, Pragyan 2017, NIT         03-02-17         Second Prize           3         CB EN.U4CIE 14002<br>Manikandan M         CB EN.U4CIE 14002<br>GB EN.U4CIE 140031         Symposium, 7th National<br>Level Technical<br>Symposium, MAMCE,         30/8/2017         Participation           3         Suja P         CB EN.U4CIE 14005<br>Thiviya S K         CB EN.U4CIE 14055         Symposium, 7th National<br>Level Technical<br>Symposium, MAMCE,         30/8/2017         Participation           4         Depak .T         CB EN.U4CIE 14056         Trichy         30/8/2017         Participation           4         Deepak .T         CB EN.U4CIE 14056         Conference, Paper<br>project Management -<br>Project Management -<br>Project Management -<br>Project Management -<br>Project Management -<br>Prosent & Future, BEC,<br>Erode         Publication<br>in Scopus<br>indexed proceedings           5         Ragavapriya         CB EN.U4CIE 14004         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore         17/8/2017         Publication<br>in Scopus<br>indexed proceedings           7         Abhilash. B         CB EN.U4CIE 14009         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore<   | Sl<br>No. | Name                  | Roll No.             | Event/Conference/Symp<br>osium/Workshop | Date       | Remarks       |
|--|-----------|-----------------------|----------------------|---|------------|---------------|
| 1         Koushik         CB_EN_U4CIE14025<br>Ganesh Prabhu         Symposium, C11,<br>Coimbatore         Participation           2         Ravichandran D         CB_EN_U4CIE14016         Event, Pragyan 2017, NIT<br>Trichy         03-02-17         Second Prize           3         Aswathy G Krishnan         CB_EN_U4CIE14005         Event, Pragyan 2017, NIT<br>Trichy         03-02-17         Second Prize           4         Aswathy G Krishnan         CB_EN_U4CIE140061         Event, Pragyan 2017, NIT<br>Trichy         03-02-17         Second Prize           3         Mainkandan M         CB_EN_U4CIE140061         Event, Pragyan 2017, NIT<br>Trichy         03/8/2017         Participation           3         Suja P         CB_EN_U4CIE140061         Event Presentation         30/8/2017         Participation           4         Depak T         CB_EN_U4CIE140661         Trichy         Trichy         Participation           4         Deepak T         CB_EN_U4CIE140061         Trichy         Participation         Participation           5         Ragavapriya         CB_EN_U4CIE14002         Workshop, Construction         Presentation,<br>ICONAMMA 2017,<br>Bangalore         Publication           6         Prabha         CB_EN_U4CIE14044         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore         Tri/8/2017         Nickexed<br>proceedings <td></td> <td>Mouries</td> <td>CB.EN.U4CIE14035</td> <td></td> <td></td> <td></td>   |           | Mouries               | CB.EN.U4CIE14035     |   |            |               |
| Ganesh Prabhu         CB.EN.U4CIE14016         Commonder           2         Ravichandran D         CB.EN.U4CIE13055         Event, Pragyan 2017, NIT         03-02-17         Second Prize           3         Aswathy G Krishnan         CB.EN.U4CIE14000         Aswathy G Krishnan         CB.EN.U4CIE14002           Mankandan M         CB.EN.U4CIE14002         Aswathy G Krishnan         CB.EN.U4CIE14002         Aswathy G Krishnan         CB.EN.U4CIE14003           Manikandan M         CB.EN.U4CIE14005         Symposium, 7th National         Level Technical         30/8/2017         Participation           1         Thiviya S K         CB.EN.U4CIE14055         Symposium, MAMCE,         Trichy         Participation           3         Thiviya S K         CB.EN.U4CIE14063         Trichy         30/8/2017         Participation           4         CB.EN.U4CIE14063         Symposium, MAMCE,         Trichy         Participation           4         Deepak .T         CB.EN.U4CIE14052         Workshop, Construction Project Management - Present & Future, BEC, Erode         Participation           5         Ragavapriya         CB.EN.U4CIE14040         Conference, Paper presentation, ICONAMMA 2017, Bangalore         Publication in Scopus indexed proceedings           6         Prabha         CB.EN.U4CIE14040         Conference, Paper presentati  | 1         | Koushik               | CB.EN.U4CIE14029     | Symposium, CII,                         |            | Participation |
| Ravichandran D         CB EN.U4CIE13055         Event, Pragyan 2017, NIT         03-02-17         Second Prize           Aswathy G Krishnan         CB.EN.U4CIE14001         Trichy         03-02-17         Second Prize           Aswathy G Krishnan         CB.EN.U4CIE14001         Trichy         03-02-17         Second Prize           Aswathy G Krishnan         CB.EN.U4CIE14001         Trichy         03-02-17         Second Prize           Manikandan M         CB.EN.U4CIE14031         Symposium, 7th National         Jarreiter         Symposium, 7th National         Jarreiter           3         Siga P         CB.EN.U4CIE14046         Symposium, 7th National         Javreiter         Participation           4         CB.EN.U4CIE14055         Trichy         Javreiter         Participation           5         Ragavapriya         CB.EN.U4CIE14062         Workshop, Construction         Protect Management -           4         Decpak .T         CB.EN.U4CIE14062         Workshop, Construction         Protecting in Scopus indexed           5         Ragavapriya         CB.EN.U4CIE14042         Conference, Paper presentation, ICONAMMA 2017, Bangalore         Publication in Scopus indexed proceedings           6         Prabha         CB.EN.U4CIE14040         Conference, Paper presentation, ICONAMMA 2017, Bangalore         Publication in S  |           | Ganesh Prabhu         | CB.EN.U4CIE14016     | Connoatore                              |            |               |
| 2     Nishok E.     CB EN.U4CIE13044     Trichy     05-02-17     Second Ph2e       Aswathy G Krishnan     CB.EN.U4CIE14000     Aswathy G Krishnan     CB.EN.U4CIE14001     Agia Arumugam K     CB.EN.U4CIE14002       Manikandan M     CB.EN.U4CIE14002     Symposium, 7th National     Level Technical     30/8/2017       13     Suja P     CB.EN.U4CIE14055     Symposium, MAMCE,     30/8/2017       Yinithan K S     CB.EN.U4CIE14055     Symposium, MAMCE,     30/8/2017       Yinithan K S     CB.EN.U4CIE14063     Trichy     30/8/2017       Swetha Krishna     CB.EN.U4CIE14063     Symposium, MAMCE,     30/8/2017       Yarsha Nair     CB.EN.U4CIE14063     Frichy     Participation       4     Deepak .T     CB.EN.U4CIE14022     Workshop, Construction Project Management - Present & Future, BEC, Erode     Participation       5     Ragavapriya     CB.EN.U4CIE14044     CONAMMA 2017, Bangalore     17/8/2017     In Scopus indexed proceedings indexed proceedings       6     Prabha     CB.EN.U4CIE14040     Conference, Paper presentation, ICONAMMA 2017, Bangalore     17/8/2017     Publication in Scopus indexed proceedings       7     Abhilash, B     CB.EN.U4CIE14039     Event, Participated in various events CAD ART, Mela, LOG IQ, Pottry     Publication       8     Prabha     CB.EN.U4CIE14038     Event, Paper pr   | 2         | Ravichandran D        | CB.EN.U4CIE13055     | Event, Pragyan 2017, NIT                | 02 02 17   | Second Drive  |
| Aswathy G Krishnan         CB.EN.U4CIE14009<br>Balaji C S         CB.EN.U4CIE14001<br>Ajay Anumugam K         CB.EN.U4CIE14002<br>(Ajay Anumugam K         Symposium, 7th National<br>Level Technical         Jay Anumugam K         CB.EN.U4CIE14005<br>(DE.N.U4CIE14056)         Symposium, 7th National<br>Level Technical         Jav Anumugam K         CB.EN.U4CIE14056           3         Thiviya S K         CB.EN.U4CIE14056         Symposium, MAMCE,<br>Trichy         Jav Anumugam K         CB.EN.U4CIE14058           4         Zarsha Nair         CB.EN.U4CIE14066         Symposium, MAMCE,<br>Trichy         Participation           4         Deepak .T         CB.EN.U4CIE14066         Project Management -<br>Present & Future, BEC,<br>Erode         Participation           5         Ragavapriya         CB.EN.U4CIE14004         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore         17/8/2017         Publication<br>in Scopus<br>indexed<br>proceedings           6         Prabha         CB.EN.U4CIE14040         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore         Publication<br>in Scopus<br>indexed           7         Abhilash. B         CB.EN.U4CIE14040         Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore         Publication<br>in Scopus<br>indexed           8         Nitishkumar M.         CB.EN.U4CIE14040         Conference, Paper<br>presentation,<br>ICONAMA 2017,<br>Bangalore         Publication<br>in Scopus<br>indexed           8         Prabha         CB.EN.U4CIE  | 2         | Nishok E.             | CB.EN.U4CIE13044     | Trichy                                  | 03-02-17   | Second Prize  |
| Balaji C SCB.EN.U4CIE14010<br>(Ajay Arumugam KCB.EN.U4CIE14002<br>(CB.EN.U4CIE14046Symposium, 7th National<br>Level Technical<br>Symposium, MAMCE,<br>TrichyJanuar<br>30/8/2017Participation3Ramana A UCB.EN.U4CIE140456<br>(CB.EN.U4CIE14056)Symposium, 7th National<br>Level Technical<br>Symposium, MAMCE,<br>TrichyJo/8/2017Participation3TamilarasiCB.EN.U4CIE14065<br>(Gowthankumar M RCB.EN.U4CIE140661<br>(CB.EN.U4CIE14066)Symposium, MAMCE,<br>TrichyJo/8/2017Participation4Deepak .TCB.EN.U4CIE14060<br>(Gowthankumar M RCB.EN.U4CIE14060<br>(CB.EN.U4CIE14060)Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation5RagavapriyaCB.EN.U4CIE14044<br>(CB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040<br>(CB.EN.U4CIE14004)Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE14004<br>(CB.EN.U4CIE14004)Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039<br>(CB.EN.U4CIE14039Conference, Paper<br>vorkshop and popsicle<br>ride, Tahva 16, NIT<br>Calicut.21/10/2017Participation<br>indexed<br>proceedings9PrabhaCB.EN.U4CIE14039<br>(CB.EN.U4CIE14038Conference, Paper<br>vorkshop and popsicle<br>ride, Tahva 16, NIT<br>Calicut.21/10/2017Seco   |           | Aswathy G Krishnan    | CB.EN.U4CIE14009     |   |            |               |
| Ajay Arumugam K         CB.EN.U4CIE14002<br>(B.EN.U4CIE14056)         Symposium, 7th National<br>Level Technical         Java P         Participation           3         Suja P         CB.EN.U4CIE14056         Symposium, 7th National<br>Level Technical         Java Pointianasi         Java Po  |           | Balaji C S            | CB.EN.U4CIE14010     |   |            |               |
| Manikandan MCB.EN.U4CIE14031<br>CB.EN.U4CIE140464<br>Suja PSymposium, 7th National<br>Level Technical<br>Symposium, MAMCE,<br>Trichy30/8/2017Participation3Thiviya S KCB.EN.U4CIE140561<br>CB.EN.U4CIE140651<br>TamilarasiCB.EN.U4CIE140651<br>CB.EN.U4CIE140651<br>Gowthamkumar M RCB.EN.U4CIE140651<br>CB.EN.U4CIE140661<br>Gowthamkumar M RWorkshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation4Deepak .TCB.EN.U4CIE140661<br>CB.EN.U4CIE140661Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodePublication<br>in Scopus<br>indexed<br>proceedings5RagavapriyaCB.EN.U4CIE140441<br>CB.EN.U4CIE140404Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE140404Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE140404Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE140404Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore21/10/2017Participation<br>in dexed<br>proceedings8PrabhaCB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsice<br>ride, Tathva 16,  |           | Ajay Arumugam K       | CB.EN.U4CIE14002     |   |            |               |
| Ramana A UCB.EN.U4CIE14046<br>CB.EN.U4CIE14056<br>Level Technical<br>Symposium, AMMCE,<br>TrichySymposium, 7th National<br>Level Technical<br>Symposium, MAMCE,<br>Trichy30/8/2017Participation3Vinithan K SCB.EN.U4CIE14056<br>CB.EN.U4CIE14061<br>Gowthamkumar M RCB.EN.U4CIE14063<br>CB.EN.U4CIE140601<br>Gowthamkumar M RWorkshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation4Deepak .TCB.EN.U4CIE14044<br>CB.EN.U4CIE14044Workshop, Construction<br>Present & Future, BEC,<br>ErodePublication<br>in Scopus<br>indexed<br>proceedings5RagavapriyaCB.EN.U4CIE14044<br>CB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE12001<br>CB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abbilash. BCB.EN.U4CIE12001<br>CB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8PrabhaCB.EN.U4CIE14040<br>CB.EN.U4CIE14040Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041<br>CB.EN.U4CIE14041Event, Paper presentation,<br>ration Sustanability<br>Entrepreneurship -<br>13/10/2017Second Prize   |           | Manikandan M          | CB.EN.U4CIE14031     |   |            |               |
| 3       Suja P       CB.EN.U4CIE14056<br>Thriviya S K       Level Technical<br>Symposium, MAMCE,<br>Tamilarasi       30'8/2017       Participation         4       CB.EN.U4CIE14065<br>Swetha Krishna       CB.EN.U4CIE14065<br>CB.EN.U4CIE14065       Trichy       30'8/2017       Participation         4       Niranjan Isai       CB.EN.U4CIE14065       Trichy       Participation       Participation         5       Ragavapriya       CB.EN.U4CIE14044       Workshop, Construction<br>Present & Future, BEC,<br>Erode       Publication       Publication         6       Prabha       CB.EN.U4CIE14044       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed<br>proceedings       Publication<br>in Scopus<br>indexed<br>proceedings         7       Abhilash. B       CB.EN.U4CIE14040       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       17/8/2017       Publication<br>in Scopus<br>indexed<br>proceedings         8       Prabha       CB.EN.U4CIE14040       Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.       21/10/2017       Participation         9       Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,<br>Incovation Sustanability<br>Entrepreneurship -       13/10/2017       Second Prize   |           | Ramana A U            | CB.EN.U4CIE14046     | Symposium, 7th National                 |            |               |
| 3     Thiviya S K     CB.EN.U4CIE14059     Symposium, MAMCE,<br>Trichy     30/8/2017     Failuepation       4     Tamilarasi     CB.EN.U4CIE14060     Trichy     10/8/2017     Failuepation       4     Oeepak .T     CB.EN.U4CIE14058     Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>Erode     Participation       5     Ragavapriya     CB.EN.U4CIE14044     Conference, Paper<br>present & Future, BEC,<br>Erode     Publication       6     Prabha     CB.EN.U4CIE14040     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       7     Abhilash. B     CB.EN.U4CIE14040     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication<br>in Scopus<br>indexed<br>proceedings       8     Prabha     CB.EN.U4CIE12001     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication<br>in Scopus<br>indexed<br>proceedings       8     Nitishkumar M.     CB.EN.U4CIE14040     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       8     Nitishkumar M.     CB.EN.U4CIE14038     Event, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     21/10/2017     Participation       9     Prabha     CB.EN.U4CIE14038     Event, Paper presentation,<br>rockshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.     21/10/2017     Participation   | 3         | Suja P                | CB.EN.U4CIE14056     | Level Technical                         | 30/8/2017  | Darticipation |
| Vinithan K SCB.EN.U4CIE14061<br>TamilarasiTrichyTrichyTrichyTrichyTrinilarasiCB.EN.U4CIE14063<br>CB.EN.U4CIE14060<br>Gowthamkumar M RCB.EN.U4CIE14060<br>CB.EN.U4CIE14022TrichyAtNiranjan IsaiCB.EN.U4CIE14020<br>CB.EN.U4CIE15016Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation4Deepak .TCB.EN.U4CIE15016Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001<br>CB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE12001<br>CB.EN.U4CIE14040Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14040<br>CB.EN.U4CIE14041Event, Paper presentation,<br>Trink India Research<br>Innovation Sustainability<br>Entrepreneurship -21/10/2017Second Prize  | 5         | Thiviya S K           | CB.EN.U4CIE14059     | Symposium, MAMCE,                       | 50/8/2017  | Farticipation |
| TamilarasiCB.EN.U4CIE14063Swetha KrishnaCB.EN.U4CIE14058Varsha NairCB.EN.U4CIE14020Varsha NairCB.EN.U4CIE14020Miranjan IsaiCB.EN.U4CIE15502Deepak .TCB.EN.U4CIE15016ParticipationPresent & Future, BEC,<br>ErodeParticipationParticipationStagavapriyaCB.EN.U4CIE14044CB.EN.U4CIE14044CB.EN.U4CIE14044CB.EN.U4CIE14044PrabhaCB.EN.U4CIE14044CB.EN.U4CIE14040PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedingsParbhaCB.EN.U4CIE14040PrabhaCB.EN.U4CIE12001Presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedingsProceedingsParbinaCB.EN.U4CIE14040Presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017ProceedingsProceedingsProceedingsProceedingsConference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedingsPrabhaCB.EN.U4CIE14039PrabhaCB.EN.U4CIE14039PrabhaCB.EN.U4CIE14039PrabhaCB.EN.U4CIE14040PrabhaCB.EN.U4CIE14041PrabhaCB.EN.U4CIE14041PrabhaCB.EN.U4CIE14041PrabhaCB.EN.U4CIE14041PrabhaCB.EN.U4CIE14041Proceee  |           | Vinithan K S          | CB.EN.U4CIE14061     | Trichy                                  |            |               |
| Swetha KrishnaCB.EN.U4CIE14058<br>Varsha NairCB.EN.U4CIE14050<br>CB.EN.U4CIE14020Participation4Niranjan IsaiCB.EN.U4CIE1502Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation5RagavapriyaCB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8PrabhaCB.EN.U4CIE12001Event, Participated in<br>various events CAD ART,<br>  |           | Tamilarasi            | CB.EN.U4CIE14063     |   |            |               |
| Varsha Nair       CB.EN.U4CIE14060         Gowthamkumar M R       CB.EN.U4CIE14022         Niranjan Isai       CB.EN.U4CIE1502       Workshop, Construction         4       Deepak .T       CB.EN.U4CIE15016       Project Management -<br>Present & Future, BEC,<br>Erode       Participation         5       Ragavapriya       CB.EN.U4CIE14044       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed         6       Prabha       CB.EN.U4CIE14040       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed         7       Abhilash. B       CB.EN.U4CIE12001       T/78/2017       Publication<br>in Scopus<br>indexed         8       Nitishkumar M.       CB.EN.U4CIE14040       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed         8       Nitishkumar M.       CB.EN.U4CIE14040       Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tativa 16, NIT<br>Calicut.       21/10/2017       Participation         9       Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability       13/10/2017       Second Prize  |           | Swetha Krishna        | CB.EN.U4CIE14058     |   |            |               |
| Gowthamkumar M RCB.EN.U4CIE14022Vorkshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation4Deepak .TCB.EN.U4CIE15016Workshop, Construction<br>Project Management -<br>Present & Future, BEC,<br>ErodeParticipation5RagavapriyaCB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14049Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  |           | Varsha Nair           | CB.EN.U4CIE14060     |   |            |               |
| Niranjan Isai       CB.EN.U4CIE1502       Workshop, Construction       Participation         4       Deepak .T       CB.EN.U4CIE15016       Project Management -<br>Present & Future, BEC,<br>Erode       Participation         5       Ragavapriya       CB.EN.U4CIE14044       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed<br>proceedings         6       Prabha       CB.EN.U4CIE14040       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed<br>proceedings         7       Abhilash. B       CB.EN.U4CIE12001       Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore       Publication<br>in Scopus<br>indexed<br>proceedings         8       Nitishkumar M.       CB.EN.U4CIE14009       Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.       21/10/2017       Participation         9       Praharsha B. S       CB.EN.U4CIE14038       Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -       13/10/2017       Second Prize   |           | Gowthamkumar M R      | CB.EN.U4CIE14022     |   |            |               |
| 4     Deepak .T     CB.EN.U4CIE15016     Project Management -<br>Present & Future, BEC,<br>Erode     Participation       5     Ragavapriya     CB.EN.U4CIE14044     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       6     Prabha     CB.EN.U4CIE14040     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication<br>in Scopus<br>indexed<br>proceedings       7     Abhilash. B     CB.EN.U4CIE12001     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       8     Nitishkumar M.     CB.EN.U4CIE14039     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       8     Nitishkumar M.     CB.EN.U4CIE14039     Event, Participated in<br>various events CAD ART,<br>Wela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.     21/10/2017     Participation       9     Praharsha B. S     CB.EN.U4CIE14041     Event, Paper presentation,<br>Innovation Sustainability     13/10/2017     Second Prize  |           | Niranjan Isai         | CB.EN.U4CIE15502     | Workshop, Construction                  |            |               |
| Deepak .T     CB.EN.U4CIE15016     Present & Future, BEC,<br>Erode     Present & Future, BEC,<br>Erode       5     Ragavapriya     CB.EN.U4CIE14044     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication       6     Prabha     CB.EN.U4CIE14044     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication       7     Abhilash. B     CB.EN.U4CIE12001     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication       7     Abhilash. B     CB.EN.U4CIE12001     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     Publication       8     Nitishkumar M.     CB.EN.U4CIE14039     Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore     17/8/2017     Publication<br>in Scopus<br>indexed<br>proceedings       8     Nitishkumar M.     CB.EN.U4CIE14039     Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle     21/10/2017     Participation       8     Praharsha B. S     CB.EN.U4CIE14038     Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability     21/10/2017     Second Prize  | 4         |                       |                      | Project Management -                    |            | Participation |
| ErodeErode5RagavapriyaCB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation<br>participation8PrabhaCB.EN.U4CIE14038Event, Paper presentation,<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9——CB.EN.U4CIE14041Event, Paper presentation,<br>Innovation Sustainability13/10/2017Second Prize  |           | Deepak .T             | CB.EN.U4CIE15016     | Present & Future, BEC,                  |            | <b>I</b>      |
| 5RagavapriyaCB.EN.U4CIE14044Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040CB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation<br>presentation,<br>ICIN/20179Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Fraharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability13/10/2017Second Prize   |           |                       |                      | Erode                                   |            |               |
| 5RagavapriyaCB.EN.U4CIE14044presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017In Scopus<br>indexed<br>proceedings6PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  |           | Ragavapriya CB        |                      | Conference, Paper                       |            | Publication   |
| 6PrabhaCB.EN.U4CIE14040Conterence, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation8PrabhaCB.EN.U4CIE14038Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability21/10/2017Second Prize9Praharsha B. SCB.EN.U4CIE14041Entrepreneurship -13/10/2017Second Prize   | 5         |                       | CB.EN.U4CIE14044     | presentation,                           | 17/8/2017  | in Scopus     |
| 6PrabhaCB.EN.U4CIE14040Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  |           |                       |                      | ICONAMMA 2017,<br>Pengelore             |            | ndexed        |
| 6PrabhaCB.EN.U4CIE14040CB.EN.U4CIE14040Presentation,<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017in Scopus<br>   |           |                       |                      | Conference Paper                        |            | Publication   |
| 6PrabhaCB.EN.U4CIE14040Problem, ICONAMMA 2017, Bangalore17/8/2017In bot put indexed proceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper presentation, ICONAMMA 2017, Bangalore17/8/2017Publication in Scopus indexed proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in various events CAD ART, Mela, LOG IQ, Pottery Workshop and popsicle ride, Tathva 16, NIT Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation, Think India Research Innovation Sustainability Entrepreneurship -13/10/2017Second Prize   |           | Prabha CB.EN.U4CIE140 |                      | presentation.                           |            | in Scopus     |
| Bangaloreproceedings7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017Publication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  | 6         |                       | CB.EN.U4CIE14040     | ICONAMMA 2017.                          | 17/8/2017  | indexed       |
| 7Abhilash. BCB.EN.U4CIE12001Conference, Paper<br>presentation,<br>ICONAMMA 2017,<br>BangalorePublication<br>in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  |           |                       |                      | Bangalore                               |            | proceedings   |
| 7Abhilash. BCB.EN.U4CIE12001presentation,<br>ICONAMMA 2017,<br>Bangalore17/8/2017in Scopus<br>indexed<br>proceedings8Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017Participation9Praharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize  | -         |                       |                      | Conference, Paper                       |            | Publication   |
| 7       Abiniash. B       CB.EN.04CIE12001       ICONAMMA 2017,<br>Bangalore       17/8/2017       indexed<br>proceedings         8       Nitishkumar M.       CB.EN.04CIE14039       Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle       21/10/2017       Participation         8       Prabha       CB.EN.04CIE14040       Mela, LOG IQ, Pottery<br>Workshop and popsicle       21/10/2017       Participation         9       Praharsha B. S       CB.EN.04CIE14041       Event, Paper presentation,<br>Innovation Sustainability       13/10/2017       Second Prize   | 7         | Abbilach D            | CD EN LIACIE12001    | presentation,                           | 17/9/2017  | in Scopus     |
| Image: space s | /         | Admilasn. B           | CB.EN.04CIE12001     | ICONAMMA 2017,                          | 1//8/2017  | indexed       |
| Nitishkumar M.CB.EN.U4CIE14039Event, Participated in<br>various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017ParticipationNishanth E.SCB.EN.U4CIE14038Free transmission<br>CB.EN.U4CIE14038Free transmission<br>ride, Tathva 16, NIT<br>Calicut.ParticipationPraharsha B. SCB.EN.U4CIE14041Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -13/10/2017Second Prize   |           |                       |                      | Bangalore                               |            | proceedings   |
| Nithanta IX.CB.EN.U4CIE14039various events CAD ART,<br>Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.21/10/2017ParticipationPrabaCB.EN.U4CIE14038CB.EN.U4CIE14038Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability21/10/2017Participation  |           | Nitishkumar M         | CB EN U4CIE14039     | Event, Participated in                  |            |               |
| 8       Prabha       CB.EN.U4CIE14040       Mela, LOG IQ, Pottery<br>Workshop and popsicle<br>ride, Tathva 16, NIT<br>Calicut.       21/10/2017       Participation         9       Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability       13/10/2017       Second Prize  |           |                       | CD.LIV.C ICILII 1035 | various events CAD ART,                 |            |               |
| Mishanth E.S       CB.EN.U4CIE14038       Workshop and popsicle       ride, Tathva 16, NIT         Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,         9       Think India Research       Innovation Sustainability         9       Entrepreneurship -       13/10/2017   | 8         | Prabha                | CB.EN.U4CIE14040     | Mela, LOG IQ, Pottery                   | 21/10/2017 | Participation |
| Nishanth E.S       CB.EN.U4CIE14038       ride, Tathva 16, NIT         Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation, Think India Research Innovation Sustainability         9       Entrepreneurship -       13/10/2017   |           |                       |                      | Workshop and popsicle                   |            |               |
| 9       Calcut.       Calcut.         Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability         9       Entrepreneurship -       13/10/2017  |           | Nishanth E.S          | CB.EN.U4CIE14038     | ride, Tathva 16, NIT                    |            |               |
| Praharsha B. S       CB.EN.U4CIE14041       Event, Paper presentation,<br>Think India Research<br>Innovation Sustainability<br>Entrepreneurship -       13/10/2017   |           |                       |                      | Callcul.                                |            |               |
| 9       CB.EN.U4CIE14041       Think india Research         Innovation Sustainability       Entrepreneurship -       13/10/2017  |           |                       |                      | Think India Pasaarah                    |            |               |
| 9 Entrepreneurship - 13/10/2017 Second Prize   |           | Praharsha B. S        | CB.EN.U4CIE14041     | Innovation Sustainability               |            |               |
|  | 9         |                       |                      | Entrepreneurshin -                      | 13/10/2017 | Second Prize  |
| 2017(RISE), KGISL  |           |                       |                      | 2017(RISE), KGISL                       | 10,10,2017 | Second I IIZe |
| Nishanth E.S CB.EN.U4CIE14038 Institute of Technology,   |           | Nishanth E.S          | CB.EN.U4CIE14038     | Institute of Technology.                |            |               |
| Coimbatore   |           |                       |                      | Coimbatore                              |            |               |

| 10 | Praharsha B. S   | CB.EN.U4CIE14041 | Symposium, Paper<br>Presentation, International  | 17/2/2019           | Dorticipation |
|----|------------------|------------------|--|---------------------|---------------|
| 10 | Narayanee V      | CB.EN.U4CIE14037 | Symposium 2018,  | 17/3/2018           | Participation |
|    | Nishanth E.S     | CB.EN.U4CIE14038 | Aakaar, III Bombay.  |                     |               |
|    | Sirpi.A.S        | CB.EN.U4CIE14052 | Symposium, Paper<br>Presentation International   |                     |               |
| 11 | Samyuktha S      | CB.EN.U4CIE14048 | Civil Engineering<br>Symposium 2018  | 17/3/2018           | Participation |
|    | Anagha Murali    | CB.EN.U4CIE14004 | Aakaar, IIT Bombay.  |                     |               |
| 12 | Vivek T          | CB.EN.U4CIE15066 | Certificate of best director<br>/ Script writer Advaiya<br>2017 - The annual theatre<br>fest, Organized by srishti -<br>The literart club, Amrita<br>Vishwa Vidyapeetham | 1 to 3<br>11.2017   | Participation |
| 13 | Vivek T          | CB.EN.U4CIE15066 | Inter college Quiz held at<br>Amrita Vishwa<br>Vidyapeetham  | 21.10.2017          | First prize   |
| 14 | Vivek T          | CB.EN.U4CIE15066 | Inter college Quiz held at<br>Amrita Vishwa<br>Vidyapeetham  | 21.10.2017          | Participation |
| 15 | Vivek T          | CB.EN.U4CIE15066 | Advaiya 2017 - The<br>annual theatre fest,<br>Organized by srishti - The<br>literart club, Amrita<br>Vishwa Vidyapeetham   | 1 to 3<br>11.2017   | First prize   |
|    | Raghavapriya S M | CB.EN.U4CIE14044 | Schatzsuche, Anoka 2018,   | 22 to               |               |
| 16 | Prabha B         | CB.EN.U4CIE14040 | Amrita Vishwa<br>Vidyapeetham  | 22.10               | Third Prize   |
| 17 | Prabha B         | CB.EN.U4CIE14040 | Bob the builder, Anoka<br>2018, Amrita Vishwa<br>Vidyapeetham  | 22. to<br>24.2.2018 | Second Prize  |
|    | Ramana A U       | CB.EN.U4CIE14046 | Handball, Inter college  | 28.2.2018           |               |
| 18 | Gowtham Raj P    | CB.EN.U4CIE14021 | Tournament, Amrita<br>Vishwa Vidyapeetham  | to 3.3.2018         | Runner        |
| 19 | Vivek T          | CB.EN.U4CIE15066 | Building information<br>Modeling (Revit &<br>Navisworks) nine days<br>training at CIR Amrita<br>Vishwa Vidyapeetham  | 21 to<br>30.5.2018  | Participation |
| 20 | Vivek T          | CB.EN.U4CIE15066 | Skit, Anandmayi house,<br>during Amritotsavam<br>2018.   | 5.1.2018            | Third Prize   |
| 21 | Vivek T          | CB.EN.U4CIE15066 | Quiz , Anandmayi house,<br>during Amritotsavam<br>2018.  | 5.1.2018            | Second Prize  |
| 22 | Vivek T          | CB.EN.U4CIE15066 | Poster making,<br>Anandmayi house, during<br>Amritotsavam 2018.  | 5.1.2018            | First Prize   |

|    | Aneena John Panicker | Aneena John Panicker CB.EN.U4CIE15009 |   |                         |               |
|----|----------------------|---------------------------------------|---|-------------------------|---------------|
| 23 | Rayappa Raja S R     | CB.EN.U4CIE15047                      | economic livelihoods with<br>modernized methods ,<br>organized by Easwari<br>engineering college, Dept.<br>of Information<br>Technology   | 5.4.2018 to<br>6.4.2018 | Participation |
| 24 | Vivek T              | CB.EN.U4CIE15066                      | VASANTHAM organized<br>by department of civil<br>engineering Amrita<br>Vishwa Vidyapeetham,<br>Coimbatore , by Tamil<br>Siragu, the Tamil wing of<br>Srishti- The literary club | 08,09,22.0<br>1.2018    | Organizer     |
| 25 | Vivek T              | CB.EN.U4CIE15066                      | Team manager of<br>Transportation, Anokha<br>2018 annual National<br>technical festival at<br>Amrita school of<br>Engineering, Coimbatore,<br>Amrita Vishwa<br>Vidyapeetham.    | 22 to<br>24.02.2018     | Coordinator   |
| 26 | Vivek T              | CB.EN.U4CIE15066                      | Workshop manager of<br>civil, Anokha 2018 annual<br>National technical festival<br>at Amrita school of<br>Engineering, Coimbatore,<br>Amrita Vishwa<br>Vidyapeetham.            | 22 to<br>24.02.2018     | Coordinator   |
| 27 | Vivek T              | CB.EN.U4CIE15066                      | One day workshop on<br>Earthquake Hazard Risk<br>and Mitigation organized<br>by department of civil<br>engineering Amrita<br>Vishwa Vidyapeetham,<br>Coimbatore.                | 10.08.2018              | Participation |
| 28 | Vivek T              | CB.EN.U4CIE15066                      | Workshop on<br>Computational Structural<br>Engineering Using<br>MIDAS, organized by<br>department of civil<br>engineering Amrita<br>Vishwa Vidyapeetham,<br>Coimbatore.         | 13 to<br>14.07.2018     | Participation |
| 29 | Vivek T              | CB.EN.U4CIE15066                      | Coordinator of public<br>relations, Anokha 2018<br>Amrita school of<br>Engineering,   | 22 to<br>24.02.2018     | Coordinator   |

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# D. AY 2018-19

| SI No. | Name                   | Roll No.         | Event/Conference/Symp  | Date                           | Remarks                      |
|--------|------------------------|------------------|--|--------------------------------|------------------------------|
|        | Vishruthi.M            | CB.EN.U4CIE16055 | Participated in TRUSS<br>OPUS and has secured II<br>place during international   |                                |                              |
| 1.     | Shalini.R              | CB.EN.U4CIE16042 | level civil engineering<br>students TECH<br>Symposium, NIRMAAN   | 18.11.2018<br>to<br>19.11.2018 | Second Place                 |
|        | Raghavendra S          | CB.EN.U4CIE16035 | ICESS 2018 at BMS<br>College of Engineering at<br>Bangalore  |                                |                              |
|        | Vishruthi.M            | CB.EN.U4CIE16055 | Participated in<br>PIPLEXUS and has  |                                |                              |
| 2.     | Shalini.R              | CB.EN.U4CIE16042 | secured II place during<br>international level civil<br>engineering students   | 18.11.2018<br>to               | Second Place                 |
|        | Raghavendra S          | CB.EN.U4CIE16035 | TECH Symposium,<br>NIRMAAN ICESS 2018<br>at BMS College of<br>Engineering at Bangalore   | 19.11.2018                     |                              |
| 2      | Vishruthi.M            | CB.EN.U4CIE16055 | Campus Ambassador<br>during the international<br>level civil engineering<br>students TECH  | 18.11.2018                     |                              |
| 3.     | Raghavendra S          | CB.EN.U4CIE16035 | Symposium, NIRMAAN<br>ICESS 2018 at BMS<br>College of Engineering at<br>Bangalore  | to<br>19.11.2018               |                              |
| 4.     | Raghavendra S          | CB.EN.U4CIE16035 | Participated in GEO<br>TECHNIQUE and has<br>secured II place during<br>international level civil<br>engineering students<br>TECH Symposium,<br>NIRMAAN ICESS 2018<br>at BMS College of<br>Engineering at Bangalore | 18.11.2018<br>to<br>19.11.2018 | Second Place                 |
| 5.     | Madhumitha             | CB.EN.U4CIE17034 | In-plant training held at RGMTTC   | 19.11.2018<br>To<br>24.11.2018 | Training                     |
| 6.     | Bharathkrishna.A.<br>C | CB.EN.U4CIE16009 | Urban safety of mega<br>cities in Asia. Organized<br>by IIIT Hyderabad.  | 12.12.2018<br>to<br>14.12.2018 | Young<br>researcher<br>award |
|        | Vineeth.R              | CB.EN.U4CIE16054 | International symposium  |                                |                              |
| 7.     | Bharathkrishna.A.<br>C | CB.EN.U4CIE16009 | on new technology for<br>Urban safety of mega  | 12.12.2018<br>to               | Participated                 |
|        | Yuvankarthick M<br>C   | CB.EN.U4CIE15067 | by IIIT Hyderabad  | 14.12.2010                     |                              |

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| 10  | Abirath .D             | CB.EN.U4CIE16002 | Participated in<br>VOLKSWAGEN AMEO<br>CUP 2009 driver selection<br>program at<br>INDIKARTING Kharadi,<br>Pune. | 9.02.2019<br>to<br>10.02.2019 | Participated |
|-----|------------------------|------------------|--|-------------------------------|--------------|
|     | Vineeth.R              | CB.EN.U4CIE16054 | Present a paper on the topic dolomite rock sand  | 12 2 2010                     |              |
| 11. | Bharathkrishna.A.<br>C | CB.EN.U4CIE16009 | as fine aggregate replacement. During  | to                            | Participated |
|     | Malavika sasi          | CB.EN.U4CIE16026 | national level symposium<br>YUKTAHA 2019   | 13.2.2019                     |              |

# Table B.4.5.3(b) List of Students - International Student Exchange Programmes

|            | International Student Exchange Programmes |                  |         |                                     |  |  |  |
|------------|---|------------------|---------|-------------------------------------|--|--|--|
| Sl.<br>No. | Name                                      | Roll No.         | AY      | University                          |  |  |  |
| 1          | Ramjit N.                                 | CB.EN.U4CIE15046 | 2017-18 | University of British<br>Columbia   |  |  |  |
| 2          | Pavithran B. V.                           | CB.EN.U4CIE15038 | 2017-18 | University of British<br>Columbia   |  |  |  |
| 3          | Elavarasi Era Su                          | CB.EN.U4CIE13018 | 2016-17 | Politecnico di Milano               |  |  |  |
| 4          | Mitesh Doshi                              | CB.EN.U4CIE13039 | 2016-17 | Politecnico di Milano               |  |  |  |
| 5          | Praveen<br>Karthikeyan                    | CB.EN.U4CIE13049 | 2016-17 | National University of<br>Singapore |  |  |  |
| 6          | Shanmuga Priya K                          | CB.EN.U4CIE12047 | 2015-16 | Politecnico di Milano               |  |  |  |
| 7          | Amrita Sabhapathy                         | CB.EN.U4CIE12004 | 2015-16 | Politecnico di Milano               |  |  |  |

| CRITERION 5 | <b>Faculty Information and Contributions</b> | 200 |  |
|-------------|--|-----|--|

#### Please refer Annexure B.5.1 for faculty information

### 5.1. Student-Faculty Ratio (SFR)

No. of UG programs in the Department (n): 1

No. of PG Programs in the Department (m): 1

No. of Students in UG  $2^{nd}$  Year = **u1 = 69** 

No. of Students in UG  $3^{rd}$  Year =  $\mathbf{u2} = \mathbf{69}$ 

No. of Students in UG 4<sup>th</sup> Year = **u3** = **69** 

No. of Students in PG 1<sup>st</sup> Year = p1 = 0

No. of Students in PG  $2^{nd}$  Year = p2 = 30

| Year   | CAY<br>2018-2019 | CAYm1<br>2017-2018 | CAYm2<br>2016-2017 |
|--|------------------|--------------------|--------------------|
| u1.1 (B Tech Civil Engg.2 <sup>nd</sup> year)            | 69               | 69                 | 69                 |
| u1.2 (B Tech Civil Engg. 3 <sup>rd</sup> year)           | 69               | 69                 | 69                 |
| u1.3 (B Tech Civil Engg.4 <sup>th</sup> year)            | 69               | 69                 | 69                 |
| UG1 (B Tech Civil Engg)                                  | 207              | 207                | 207                |
| P1.1 (M Tech SCE 1 <sup>st</sup> year)                   | 0                | 30                 | 30                 |
| P1.2 (M Tech SCE 2 <sup>nd</sup> year)                   | 30               | 30                 | 30                 |
| PG1 (M Tech SCE)   | 30               | 60                 | 60                 |
| Total No. of Students in the<br>Department (S) = UG1+PG1 | 237              | 267                | 267                |
| No. of Faculty in the<br>Department (F)                  | 14               | 14                 | 15                 |
| Student Faculty Ratio (SFR)                              | 1:16.93          | 1: 19.07           | 1:17.80            |
| Average SFR  |                  | 1: 17.93           |                    |

#### Table B.5.1 Average Student Faculty Ratio

### **5.1.1. Information about the regular and contractual faculty:**

### Table B.5.1.1 Information about the regular and contractual faculty

| Year                      | Total number of regular faculty<br>in the department | Total number of contractual faculty in the department |  |
|---------------------------|--|---|--|
| CAY<br>2018-2019          | 14   |   |  |
| <b>CAYm1</b> 2017-2018    | 14   |   |  |
| <b>CAYm2</b><br>2016-2017 | 15   |   |  |

### 5.2. Faculty Cadre Proportion

| Vear               | Professors  |           | Associate Professors |           | Assistant Professors |           |
|--------------------|-------------|-----------|----------------------|-----------|----------------------|-----------|
| i cui              | Required F1 | Available | Required F2          | Available | Required F3          | Available |
| CAY<br>2018-2019   | 1.32        | 2         | 2.63                 | 0         | 7.90                 | 12        |
| CAYm1<br>2017-2018 | 1.48        | 2         | 2.96                 | 0         | 8.90                 | 12        |
| CAYm2<br>2016-2017 | 1.48        | 2         | 2.96                 | 0         | 8.90                 | 13        |
| Average<br>Numbers | RF1=1.43    | AF1=2     | RF2=2.85             | AF2=0     | RF3=8.57             | AF3=12.33 |

Table B.5.2 Cadre Ratio Mark Calculation

Cadre Ratio Marks =  $[(AF1 / RF1) + [(AF2 / RF2) \times 0.6] + [(AF3 / RF3) \times 0.4]] \times 10$ 

 $= [(1.398) + 0 + (1.439 \times 0.4)] \times 10 = 19.74$ 

Cadre Ratio Marks = **19.74** 

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# 5.3. Faculty Qualification

|                       | X         | Y    | F  | FQ=2.0×[(10X+4Y)/F)] |
|-----------------------|-----------|------|----|----------------------|
| CAY<br>18-19          | 6         | 8    | 12 | 15.3                 |
| <b>CAYm1</b><br>17-18 | 5         | 9    | 14 | 12.3                 |
| <b>CAYm2</b><br>16-17 | 4         | 11   | 14 | 12                   |
|                       | Average a | 13.2 |    |                      |

## Table B.5.3 Faculty Qualification Average assessment

# **5.4 Faculty Retention**

# Table B.5.4.1 Faculty retention marks

No. of regular faculty members in CAYm3 (2015-16) = 14

| Item   | Monka  |  |  |  |  |
|--|--------|--|--|--|--|
| (% of faculty retained during the period of assessment keeping CAYm3 as base year) | wiarks |  |  |  |  |
| >=90% of required Faculty members retained during the period of three              | 10     |  |  |  |  |
| academic years keeping CAYm3 as base year  |        |  |  |  |  |
| >=75% of required Faculty members retained during the period of three              | 08     |  |  |  |  |
| academic years keeping CAYm3 as base year  | 00     |  |  |  |  |
| >=60% of required Faculty members retained during the period of three              | 06     |  |  |  |  |
| academic years keeping CAYm3 as base year  |        |  |  |  |  |
| >=50% of required Faculty members retained during the period of three              | 04     |  |  |  |  |
| academic years keeping CAYm3 as base year  | 01     |  |  |  |  |
| <50% of required Faculty members retained during the period of three academic      | 0      |  |  |  |  |
| years keeping CAYm3 as base year   | Ū      |  |  |  |  |

| Description  | CAY m2<br>2016-2017 | CAY m1<br>2017-2018 | CAY<br>2018-2019 |
|--|---------------------|---------------------|------------------|
| No of faculty retained<br>for 3 years keeping<br>CAYm3 2015-2016<br>as base year | 12                  | 11                  | 10               |
| Faculty retention (%)  | 12/14 = 85.71       | 11/14 = 78.57       | 10/14 = 71.42    |
| Average Faculty<br>retention (%)   |                     | 78.56               |                  |

# Table B.5.4.2 Average Faculty Retention

## 5.5. Faculty competencies in correlation to Program Specific Criteria

Tables B.5.5.1 & B.5.5.2 shows the faculty competencies in correlation to the POs and program specific criteria.

Table B.5.5.1 Faculty competencies in correlation to Program Specific Criteria

| S.no | Name of the Staff       | Specialization/<br>Expertise                                  | PO1 to PO12 |                       | 012                | PSO1- Related to<br>Structural,<br>Geotechnical,<br>Transportation &<br>Environmental<br>Engg. |                       |                    | PSO2- Design &<br>Details with<br>specifications and<br>Estimates for<br>Systems like<br>Buildings and<br>Hydraulic Structures |                       |                    | PSO3- Apply<br>Concepts of<br>Construction<br>Engg.,<br>Management &<br>Sustainability in<br>project<br>Environment |                       |                    |
|------|-------------------------|---|-------------|-----------------------|--------------------|--|-----------------------|--------------------|--|-----------------------|--------------------|---|-----------------------|--------------------|
|      |                         |   |             | Research Publications | Course development | Course Handled   | Research Publications | Course development | Course Handled   | Research Publications | Course development | Course Handled  | Research Publications | Course development |
| 1    | Dr.Mini K M             | Structural & Material Engineering                             | Yes         | Yes                   | Yes                | Yes  | Yes                   | Yes                | Yes  |                       | Yes                |   | Yes                   | Yes                |
| 2    | Dr.K.B.Anand            | Construction Management and Building<br>Science               | Yes         | Yes                   | Yes                | Yes  | Yes                   | Yes                |  |                       | Yes                | Yes   | Yes                   | Yes                |
| 3    | Dr. Soundharajan B      | Water resource Engineering &<br>Geographic Information System | Yes         | Yes                   | Yes                |  | Yes                   | Yes                | Yes  | Yes                   | Yes                | Yes   | Yes                   | Yes                |
| 4    | Dr.Mithun Mohan         | Transportation Engineering                                    | Yes         | Yes                   | Yes                | Yes  | Yes                   | Yes                |  |                       |                    | Yes   | Yes                   | Yes                |
| 5    | Dr.Anil Kumar<br>Sharma | Geotechnical Engineering                                      | Yes         | Yes                   | Yes                | Yes  | Yes                   | Yes                | Yes  |                       | Yes                | Yes   | Yes                   | Yes                |

 Table B.5.5.2 Department Specialization Verticals

| Structural & Material  | Controbuing Engineering   | Water resource    | Transportation     | Environmental     | Construction<br>Management | Geographic             |
|--|---|-------------------|--------------------|-------------------|----------------------------|------------------------|
| Engineering  | Geotechnical Engineering  | Engineering       | Engineering        | Engineering       | and Building               | Information System     |
| Dr Mini K M  | Dr. Anil Kumor Shormo   | Dr Soundharaian P | Dr Mithun Mohan    | Mr Drokoch C      | Dr K P Anond               | Dr Soundharaian P      |
| Dr. K. P. Anond  | Mc Survo M  | Mr Drokoch C      | Mr D Dalvash       | Dr Soundharaian P | Mr Lalith Drakach          | Mr. D. Domkrighton     |
| Dr.M.K.B.Allallu   | Mr. D. Demkrichnen  | WILFTakash C      | Mr M A ponthlumor  |                   | Mr. D. Dalvash             | WILLN. NATIKI ISIIIAII |
| DI.WI K Harlullarall   | MIT.K.Kallikitsiiliali  |                   | wir.wi.Ananunkumar |                   | MILP.Kakesh                |                        |
| Dr.Dhanya Sauiyan  |   |                   |                    |                   |                            |                        |
| Mr.M Ananthkumar   |   |                   |                    |                   |                            |                        |
| Ms.V.Poornima  |   |                   |                    |                   |                            |                        |
| Mr.P.Rakesh  |   |                   |                    |                   |                            |                        |
|  |   | Adj               | unct Professor     |                   |                            | 1                      |
| Prof.Katta<br>Venkataramana<br>Professor of Civil<br>Engineering<br>National Institute of<br>Technology, Karnataka                                 | Dr. Sanjay Kumar Shukla<br>Associate Professor and<br>Program Leader<br>Discipline of Civil and<br>Environmental Engineering<br>Edith Cowan University<br>Australia |                   |                    |                   |                            |                        |
| Prof. Vellore .S.<br>Gopalaratnam,<br>Professor of Civil<br>Engineering<br>University of Missouri-<br>Columbia<br>Columbia, Missouri<br>65211-2200 |   |                   |                    |                   |                            |                        |

# 5.6. Innovations by the Faculty in Teaching and Learning

| Sl | Faculty Name         Course handled         Innovation in Teaching and |   | Remarks  |  |
|----|--|---|--|--|
| no | ~  | handled   | Learning   |  |
| 1  | Mr.E.Lalith<br>Prakash   | MNG400-<br>Principles of<br>Management          | An exposure to startup ideas,<br>incubators in India was given<br>to the students. Students were<br>asked to do a preliminary<br>market survey and<br>methodology framing for any<br>start-up idea of their choices,<br>as a term project which was<br>higher weightage in their<br>Internal marks. Students were<br>grouped into 10-15 teams<br>depending on the class<br>strength. An insight about<br>forming a Detailed Project<br>Report (DPR) was also taught<br>in the class. Best DPR reports<br>were chosen and guided to<br>competition held by Business<br>incubators in South India. | 2013-2017 Batch: One of<br>the student team (Cashless<br>credit cards) bagged a spot<br>in "top 30 startup idea"<br>organised by Amrita<br>Technology Business<br>Incubator. Also the startup<br>model was implemented in<br>the university's cultural fest<br>ANOKHA 2017. Team<br>members: Akhil reddy &<br>Akshay Reddy. 2014-2018<br>Batch: One of the student<br>team has successfully<br>registered a Private limited<br>company based on their<br>DPR on the theme "Solid<br>waste Management". Team<br>Members: Koushik Raj &<br>Gowtham Raj |
| 2  | Mr. E.Lalith<br>Prakash  | 15CVL302<br>Design of<br>concrete<br>structures | Students were given a term<br>project in which they have to<br>visit a construction site and<br>collect information like<br>footing details, reinforcement<br>details, estimation details,<br>structural details. They were<br>asked to make a presentation<br>using the data collected.<br>Students were tested for their<br>understanding about the<br>differences and importance of<br>the theoretical structural<br>knowledge over practical<br>knowledge. A report was<br>submitted by team of 5 or 6   | Students were also asked to<br>construct a standard macros<br>excel sheet templates for<br>designing simple structural<br>elements like beams ,<br>columns, slabs and dog<br>legged stair cases as a part<br>of the term project.  |

# Table B.5.6.1 Details of the Innovation in Teaching and Learning by faculties

|   |                        |   | students at the end of the<br>semester. The entire exercise<br>was considered as a term<br>project.   |  |
|---|------------------------|---|---|--|
| 3 | Mr.E Lalith<br>Prakash | CVL480<br>Construction<br>Management                | Primavera - a project<br>management software tool<br>was taught to the students in<br>the class. A hands on training<br>was given for every students<br>working on their personal<br>laptops for about 8 teaching<br>hours with the help of<br>projector. A term project on<br>'scheduling and planning of a<br>construction of a simple<br>building' using Primavera was<br>given to the students. The<br>term project was given higher<br>weightage in their internal<br>marks. |  |
| 4 | Dr.K M Mini            | 15CVL111<br>Introduction<br>to Civil<br>Engineering | Students are encouraged to<br>present their views about the<br>various specialisations in<br>Civil Engg along with the<br>future aspects in<br>Construction. They were<br>made to read the news related<br>to the present construction<br>techniques. Students are also<br>exposed to "Ethics in<br>Construction" by an<br>experienced Civil Engineer.  | The students become more<br>confident by knowing the<br>vast opportunities available<br>to them.   |
| 5 | Dr. Mithun<br>Mohan    | 15CVL313<br>Transportation<br>Engineering I         | Traffic simulation software<br>"VISSIM" was used to<br>simulate various traffic<br>conditions in the field so that<br>students will be able to have a<br>better understanding of the<br>inter-dependencies among the<br>various parameters used to<br>describe the traffic stream   | Simulations were effective<br>in explaining the concepts<br>rather than long verbal<br>descriptions. Conditions of<br>traffic stream could be<br>easily varied and could be<br>displayed to the students<br>for better understanding of<br>the change in parameters<br>affecting traffic flow. |

| 6 | Dr. Mithun<br>Mohan                    | 15CVL471<br>Traffic<br>Engineering<br>and<br>Management | <ol> <li>Real world traffic problems<br/>were given to the students as<br/>assingment.</li> <li>Traffic simulation software<br/>"VISSIM" was used to<br/>simulate various traffic<br/>conditions in the field so that<br/>students will be able to have a<br/>better understanding of the<br/>inter-dependencies among the<br/>various parameters used to<br/>describe the traffic stream</li> </ol> | 1. Students were made to<br>evaluate of the various<br>concepts that they have<br>studied from the course and<br>to put into use to suggest<br>effective measures to the<br>problem. Since they were<br>trying to find solutions to<br>real-life problems, this<br>exercise will be fruitful to<br>them when they meet with<br>similar challenges as a<br>practicing engineer<br>2.Simulations were<br>effective in explaining the<br>concepts rather than long<br>verbal descriptions |
|---|--|---|--|--|
| 7 | Dr. Mithun<br>Mohan                    | 15CVL403<br>Transportation<br>Engineering II            | The course was highly theory-<br>oriented that covered a wide<br>spectrum of topics which<br>included railways, airports,<br>harbour and tunnelling. The<br>lectures were supplemented<br>with PowerPoint<br>presentations that showcased<br>animations and pictures of<br>real-world examples of<br>different types of facilities<br>and their functioning.   | The presentations were<br>highly appreciated by<br>students and were made<br>available to them which<br>covered the entire syllabus<br>in a concise form.  |
| 8 | Ms<br>VPoornima/Mr<br>M<br>Ananthkumar | 15CVL386<br>Estimation<br>and Valuation<br>Practice     | <ol> <li>Students were asked to<br/>do the presentation on<br/>estimation of real time project<br/>to understand the concepts<br/>more precisely</li> <li>An introductory talk<br/>regarding the software<br/>ESTIMA was given by<br/>industry people to understand<br/>the application of software in<br/>the subject</li> </ol>  | Their presentation were<br>evaluated and suggestions<br>were given to improve their<br>estimation skill  |

| 9 | Dr. K.B.<br>Anand | 15 CVL 441<br>Architectural<br>Science | <ol> <li>Identification of real<br/>world examples of adoption of<br/>architectural elements in<br/>buildings</li> <li>Case study<br/>presentation-critical<br/>evaluation on transformation<br/>and adoption of primary<br/>forms</li> <li>Market survey on the<br/>varities of high performance</li> </ol> | Students get an opputtunity<br>to apply the knowledge<br>gained in lectures |
|---|-------------------|--|--|---|
|   |                   |  | varities of high performance<br>glazings   |   |

### **Flowchart of Teaching-Learning Process**



Fig. B.5.6.1 Teaching-Learning Process flowchart

#### **Instructional Methods:**

### ICT:

- Along with blackboard teaching, faculties are using multimedia tools such as PowerPoint presentations and educational videos in the class. Site visits are also conducted to enhance the knowledge in the latest trends in construction and practical exposure of the students.
- Students are encouraged to make use of online courses like NPTEL, QEEE classes and get certified.
- Students are asked for web based learning with access to online Journals and E books.
- In-house developed A-View Lab is used for the participation of students in QEEE program conducted by IITs, intra-university online seminars etc.
- AUMS in house developed online platform is used for student mentoring and monitoring through online examinations, assignments, course materials etc. Students can also view their attendance status and academic performance.

#### **Model Based Teaching:**

- Faculty members use models wherever required to explain the content such as hydraulic structures, various flow measurement instruments etc.
- Models based teaching for the subjects are planned before the starting of the semester.

This has an added advantage of motivating the students and making them interactive. It also influences the students to work their own models for their mini projects.

• Animation videos/ Graphics/ Videos are used for explaining topics such as field testing methods in civil engineering.

### **Students Internships and Projects:**

- Student exchange opportunities are extended to encourage students for doing their project (a semester abroad) by taking an equivalent course credit in various international universities like Politechnica de Milano, University of British Columbia, and University of New Mexico etc.
- Internships are also offered to deserving students to foreign universities as well as in various industries.
- Students are offered opportunities to work in collaboration with international students for their project.
- Term projects are given for second and third year students apart from the regular curriculum to motivate them for group learning and to have hands on experience.
- Students are motivated to work on socially relevant projects through Live-in-Labs.
- Students are encouraged to visit the construction sites, construction material manufacturing units and public infrastructures as part of their curriculum.

#### **Advanced Tools:**

• Students are exposed to advanced versions in Software like, STAAD pro, COMSOL (FEA), Primavera, BIM, QGIS etc. in addition to their curriculum.

## Student Seminars and Guest Lectures:

- Student seminars are arranged for most of the courses from the first year itself to improve their communication and confidence level.
- Guest Lectures are conducted by inviting eminent persons from Industry and Academics
- Students are also motivated to attend the conferences and workshops organized by the department and other institutions.
- Corporate and Industrial Relations (CIR) has established MoU with various organizations and invite experts to give special lectures and seminars on current topics.

### **Professional Bodies:**

- The importance of being a member in the professional bodies is explained to the students.
- Each and every student is a member of at least one professional society affiliated to the department.
- The Professional Societies like Indian Concrete Institute (ICI), Association of Consulting Civil Engineers (ACCE (I)), Builders Association of India (BAI) are active in the Department of Civil Engineering.
- Student chapter of ASCE is also being planned and an orientation program was also organized by the department. Prof. P. Rajayogan, the former President of ASCE India Section - Southern Region, delivered a special lecture on the importance of ASCE student chapter.

### **Competitive Exams:**

- Soft skill development is enhanced through special courses offered by CIR.
- Mock placement and mock online tests are being conducted by CIR in line with different company perspectives for the students to learn the interview process.
- Extensive awareness is created among the students about the openings in different public sector undertakings and the national level examinations for Government services. GATE, IES, PSU, GRE

## **Faculty Peer Group:**

- An academic calendar containing the working days and the schedule of all exams and other events will be distributed to each student at the beginning of the academic year. This will help students as well as teachers to plan well for teaching and learning.
- A curriculum book is distributed to students containing the details of each course and other academic details.

- Faculty handling each subject has to maintain a work register. A lecture plan is prepared by each faculty before beginning of the semester. This helps the faculty to keep track of the coverage of topics. The topic handled in each class, details of quizzes and assignments, marks obtained by students etc. are entered in the work register.
- Course Outcome (CO) are decided by each faculty at the beginning of the semester. The CO – PO mapping, attainment level calculation are done after each examination, which helps to take remedial measures in the way of teaching if there are any gaps.
- Student feedback is taken three times during a semester online, which also helps in improving the way of teaching.
- Regular class committee meetings are conducted during each semester which helps to monitor the performance of students.
- All matters related to academic and student centric are discussed and evaluated in Department management committee.
- Faculty encourages students to take up research based projects and also provide options to involve in their projects. This enhances the research attitude of the students which motivates them to pursue higher studies.

#### **Innovative Methods of Teaching Adopted:**

#### **Discussion Forum:**

- Separate discussion sessions are arranged with the invited experts for motivating the student towards their courses.
- Students are also encouraged to interact personally with the guest/invited speaker for any clarification about the future prospects in Civil Engineering.
- Students are given a free slot during 4.00 to 5.00 PM so that they can engage with the instructor for clarification of any doubt. Apart from this, remedial classes are also running during this period.
### **Innovative Practices:**

- Google groups are formed for each academic year batch semester. This way they can post their queries or doubts to the instructor and doesn't have to wait till their next class.
- WhatsApp Groups are also formed so that they can quickly reach to the instructor and get their doubts clarified. In case the instructor wants the student to come prepared with some topics, he can post the same before the classes.
- Regular meetings among the faculty members arranged to have discussion on recent innovations and how to showcase it to the students.

### **Class Committee Meeting:**

- Three class committee meetings are arranged with the class representatives in each semester in the presence of class advisor and the chairperson where the students can discuss openly about any issues in any one of the course.
- The feedback about each course is taken after each periodical exam and in case of any issues faced by the students; the same is forwarded to the respective instructor.
- This way it is ensured that the students should not face any problems during the semester.

#### Feedback on the Course:

- Feedback survey is done for each courses thrice in a semester based on different parameters.
- Students are given opportunity to give their feedback confidentially through online process.
- The result of the feedback survey is available online and the instructor can download as feedback report.

Faculty with above 90% evaluation is appreciated during the faculty meeting and those with less than 75% are called individually by the Chairperson to understand the reason

and to provide remedial measures. These are also discussed in the Department Management Committee meetings.

# 5.7. Faculty as participants in Faculty development/training activities/STTPs

| S. |   | М                | ax. 5 per Facı     | ılty               |
|----|---|------------------|--------------------|--------------------|
| No | Name of the Faculty   | CAY<br>2018-2019 | CAYm1<br>2017-2018 | CAYm2<br>2016-2017 |
| 1  | Dr.K.M.Mini   | 5                | 5                  | -                  |
| 2  | Dr.K.B.Anand  | 3                | -                  | -                  |
| 3  | Dr.Anil Kumar Sharma  | 3                | 3                  | 3                  |
| 4  | Dr.B.Soundharajan   | 5                | -                  | -                  |
| 5  | Dr.Haridharan.M.K   | 5                | -                  | -                  |
| 6  | Dr. Dhanya Sathyan  | 3                | 5                  | 3                  |
| 7  | Mr.M.Ananth kumar   | 5                | -                  | -                  |
| 8  | Mr.C.Prakash  | 3                | -                  | 5                  |
| 9  | Mr.E.Lalithprakash  | 3                | 5                  | 3                  |
| 10 | Mr.R.Ramkrishnan  | 3                | 3                  | -                  |
| 11 | Ms.S.Sruthy   | 5                | -                  | 3                  |
| 12 | Ms.V.Poornima   | 3                | -                  | 5                  |
| 13 | Dr.T.M.Rahul  | -                | 3                  | 5                  |
| 14 | Dr.K.Sreevalsa  | -                | 3                  | -                  |
| 15 | Ms.K.Suchitra   | -                | -                  | 3                  |
|    | Sum   | 46               | 27                 | 30                 |
|    | Rf= Number of faculty required to<br>comply with 20:1 Student faculty<br>ratio as per 5.1 | 12               | 14                 | 14                 |
|    | Assessment = 3 x (sum/0.5 R.F)<br>Marks limited to 15                                     | 23               | 11.57              | 12.86              |
|    | Average assessment over three years   | 15               | .81                |                    |

 Table B.5.7.1 Faculty Training Activities - Average Assessment

 Table B.5.7.2 Faculty Training Activities 2018-2019

| S.<br>No | Name of the faculty     | Title of the program  | Duration of the program         | Hosting Institution   |
|----------|-------------------------|---|---------------------------------|---|
| 1        | Dr.Anil Kumar<br>Sharma | Indian Geotechnical Conference<br>(IGC 2018)  | 3 days<br>(13-15 December 2018) | Indian Institute of Science, Bangalore                              |
| 2        | Dr.B.Soundharajan       | Conference on Water Security and Climate<br>Change, Nirobi  | 3 days<br>(3-5 December 2018)   | Kenyatta University, Nairobi, Kenya                                 |
| 3        | Dr.B.Soundharajan       | Sandpit   | 3 days<br>(27-30 November 2018) | DST and NWO at Delhi  |
| 4        | Dr.Haridharan.M.K       | XI Structural Engineering Convention -2018  | 3 days<br>(19-21 December 2018) | Jadavpur University, Kolkata.                                       |
| 5        | Dr.Haridharan.M.K       | ICCIEE 2017-2018  | 2 days<br>(16-17 March 2018)    | Sastra University, Thanjavur  |
| 6        | Dr.Haridharan.M.K       | Workshop and Seminar on Industrial,<br>Commercial and Special Flooring  | 2 days (1-2 June 2018)          | Association of Consulting Civil<br>Engineers(India), Madurai Centre |
| 7        | Mr.C.Prakash            | DST SERB sponsored "International<br>Conference on Emerging Contaminants in<br>water and Environment (ECWE 2019)" | 2 days<br>(22-23 January 2018)  | PSG institute of Advance studies and NRIIC, Coimbatore              |
| 8        | Mr.R.Ramkrishnan        | QIP short term course on "Recent<br>Advancement in Earthquake Geotechnical<br>Engineering"                        | 5 days<br>(18-22 February 2019) | Indian Institute of Technology,<br>Kanpur.                          |

| 9  | Ms.S.SruthyWorkshop on "Computational Structural<br>Engineering Using MIDAS"2 days<br>(13-14 July 2018) |   | MIDAS & Amrita vishwa<br>Vidyapeetham, Coimbatore |   |
|----|---|---|---|---|
| 10 | Dr.K.M.Mini   | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018)                   | Association of Consulting Civil<br>Engineers(India)- Coimbatore centre,<br>Indian concrete Institution –<br>Coimbatore centre & Amrita vishwa<br>Vidyapeetham, Coimbatore |
| 11 | Dr.K.B.Anand  | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018)                   | Association of Consulting Civil<br>Engineers(India)- Coimbatore centre,<br>Indian concrete Institution –<br>Coimbatore Centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore |
| 12 | Mr.M.Ananthkumar  | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018)                   | Association of Consulting Civil<br>Engineers(India)- Coimbatore Centre,<br>Indian concrete Institution –<br>Coimbatore Centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore |
| 13 | Dr.Dhanya Sathyan   | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018)                   | Association of Consulting Civil<br>Engineers(India)- Coimbatore Centre,<br>Indian concrete Institution –<br>Coimbatore Centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore |
| 14 | Ms.S.Sruthy   | International seminar on Precast Prestressed concrete for Infrastructure Applications –   | 2 days<br>(20-21 December 2018)                   | Association of Consulting Civil<br>Engineers(India)- Coimbatore Centre,<br>Indian concrete Institution –  |

|    |                    | Opportunities and challenges in Indian context  |                                 | Coimbatore Centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore   |
|----|--------------------|---|---------------------------------|---|
| 15 | Ms.V.Poornima      | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018) | Association of Consulting Civil<br>Engineers(India)- Coimbatore centre,<br>Indian concrete Institution –<br>Coimbatore centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore |
| 16 | Mr.E.Lalithprakash | International seminar on Precast Prestressed<br>concrete for Infrastructure Applications –<br>Opportunities and challenges in Indian<br>context | 2 days<br>(20-21 December 2018) | Association of Consulting Civil<br>Engineers(India)- Coimbatore centre,<br>Indian concrete Institution –<br>Coimbatore centre & Amrita Vishwa<br>Vidyapeetham, Coimbatore |
| 17 | Dr.K.M.Mini        | First International conference on Material<br>Science and Manufacturing technology 2019<br>(ICMSMT 2019)  | 2 days<br>(12-13 April 2019)    | IOP Material Science and Engineering  |
| 18 | Mr.M.Ananthkumar   | First International conference on Material<br>Science and Manufacturing technology 2019<br>(ICMSMT 2019)  | 2 days<br>(12-13 April 2019)    | IOP Material Science and Engineering  |

| S.<br>No | Name of the<br>faculty      | Title of the program                           | Duration of the program | Hosting Institution                      |
|----------|-----------------------------|--|-------------------------|--|
| 1        | Dr K M Mini                 | International conference on "ISMAC in          | 2 days                  | SCAD Institute of Technology,            |
| 1        |                             | Computational Vision and bio-engineering"      | (16-17 May, 2018)       | Coimbatore                               |
|          |                             | National seminar and exhibition on "Recent     |                         |  |
| 2        | Dr K M Mini                 | Deevlopmet in Design and construction          | 3 days                  | Association of Consulting Civil          |
|          |                             | technologies of Building Blocks of             | (21-23 February, 2018)  | Engineers(India), Bangalore Centre       |
|          |                             | Transformation"                                |                         |  |
|          | Dr Anil Kumar               | Southeast Symposium of "Recent development     | 2 dave                  |  |
| 3        | Sharma                      | in Geotechnics with Themed workshop on         | (8-9  July  2017)       | Southeast University, Nanjing, P R China |
|          | Sharma                      | Offshore Geotechnics"                          | (0-) July, 2017)        |  |
| 1        | Dr Dhanya Sathyan           | Workshop on "Advanced material                 | 2 days                  | PSG college of Technology & Ministry of  |
| 4        | Di.Dhanya Satiiyan          | Characterization"                              | (27-28 October, 2016)   | textiles(Govt. of India)                 |
|          |                             | National seminar and exhibition on "Recent     |                         |  |
| 5        | Dr Dhanya Sathyan           | Deevlopmet in Design and construction          | 3 days                  | Association of Consulting Civil          |
| 5        | Di.Dhanya Satiiyan          | technologies of Building Blocks of             | (21-23 February, 2018)  | Engineers(India), Bangalore Centre       |
|          |                             | Transformation"                                |                         |  |
| 6        | Mr F I alithnrakash         | Short term course on "Extreme events, Disaster | 5 days                  | DST and Visvesvaraya National Institute  |
| 0        | WII.E.Lantiipiakasii        | Risk Reduction and Management"                 | (19-23 March, 2018)     | of Technology, Nagpur                    |
|          |                             | Conference on "Irbanisation Challenges in      | 2 days                  | American Society of Civil Engineers      |
| 7        | Mr.E.Lalithprakash          | Emerging Economies"                            | (13-14 December,        | Indian Chapter                           |
|          |                             | Emerging Leonomies                             | 2017)                   |  |
| 8        | Mr R Ramkrishnan            | GeoChina 2018                                  | 3 days                  | Zheijang University, Hangzhou, China     |
| 0        | 1911 .IX.IXaiiiKi isiillall | 6000mma 2010                                   | 23-25 July 2018         | Zhejiang Oniversity, Hangzhou, Chilla    |

| 9  | Dr.T.M.Rahul   | Guest lecture for the DST -SERB Sponsored<br>National Level Two day's workshop on "Green<br>Technology for Sustainable Development". | 2 days<br>(19-20 January 2018) | Sri Krishna College of Engineering &<br>Technology  |
|----|----------------|--|--------------------------------|---|
| 10 | Dr.K.Sreevalsa | Second Sino-South Asia Disaster prevention and Reduction Forum   | 5 days<br>(10-14 May, 2018)    | Institute for Disaster Management and<br>Reconstruction, Sichuan University,<br>Chengdu, China. |

| S.<br>No | Name of the faculty     | Title of the program   | Duration of the<br>program          | Hosting Institution                                |
|----------|-------------------------|--|-------------------------------------|--|
| 1        | Dr.Anil Kumar<br>Sharma | International conference on "Soil and<br>Environment"  | 2 days<br>(22-23 July, 2016)        | Indian Institute of Science, Bangalore             |
| 2        | Dr.Dhanya Sathyan       | NAAC sponsored National seminar on<br>"Curriculum Design for sustainable and<br>societal Development : A Road Map"   | 2 days<br>(12-13 August, 2016)      | Amrita vishwa Vidyapeetham,<br>Coimbatore          |
| 3        | Mr.C.Prakash            | TEQIP II CoE ES sponsored workshop on<br>"Nanotechnology principles in Energy and<br>Environmental Applications"   | 3 days<br>(17-19 August, 2016)      | Government College of Technology,<br>Coimbatore    |
| 4        | Mr.E.Lalithprakash      | International workshop on "Sensors and<br>Small satellite technology for Disaster<br>Management"   | 3 days<br>(17-19 August, 2016)      | Amrita Vishwa Vidyapeetham,<br>Amritapuri, Kerala. |
| 5        | Ms.V.Poornima           | TEQIP II sponsored Faculty Development<br>Program on "Alternative Materials and<br>Methods in Civil Engineering"   | 7 days<br>(19-25 October,<br>2016)  | Coimbatore Institute of Technology,<br>Coimbatore  |
| 6        | Ms.S.Sruthy             | NAAC sponsored National seminar on<br>"Curriculum Design for sustainable and<br>societal Development : A Road Map"   | 2 days<br>(12-13 August, 2016)      | Amrita Vishwa Vidyapeetham,<br>Coimbatore          |
| 7        | Dr.T.M.Rahul            | Expert lectures in AICTE sponsored five-day<br>QIP Short Term Course on "Modelling and<br>Analysing Sustainable Transport for<br>Scientific Decision Support". | 5 days<br>(26-30 December,<br>2016) | Indian Institute of Science, Bangalore             |
| 8        | Ms.K.Suchitra           | Training program on "Bhuvan : Your<br>Gateway to Geospatial World"   | 2 days<br>(7-8 September 2016)      | NRSC   |

 Table B.5.7.4 Faculty Training Activities 2016-2017

#### 5.8. Research and Development

#### 5.8.1. Academic Research

Academic research includes research paper publications, Ph.D. guidance, and faculty receiving Ph.D. during the assessment period.

Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc. (15)

Ph.D. guided /Ph.D. awarded during the assessment period while working in the Institute (5)

All relevant details shall be mentioned.

|                    | 2018-19 | 2017-18 | 2016-17 |  |
|--------------------|---------|---------|---------|--|
| Journal /          |         |         |         |  |
| Conference         | 61      | 34      | 12      |  |
| Publications       |         |         |         |  |
| Books/Book         | 1       | 2       |         |  |
| Chapters           | 1       | 2       |         |  |
| Patent (Submitted) |         | 1       | 1       |  |

Table B.5.8.1.1 Details of Academic Research

### **Patent Submitted**

- Ramkrishnan R., Application No. 201741031218, "A system and a method for preventing beach erosion". Date of Filing: 04/09/2017, Publication Date: 26/10/2018
- Dr.Mini K M , Application No.201641032716 A "Seismic resistant composite concrete with higher ductility", Date of Filing :26/09/2016, Publication date: 30/03/2018

#### **Books/Book Chapters**

- a. Sugapriya P. and Ramkrishnan R Investigations on Strength & Damping Property of Rubberized Concrete LAP - Lambert Academic Publishing 2018 ISBN: 978-3-330-04454-8
- T.G Sitharam, Sreevalsa Kolathayar, Preparing for Earthquakes: Lesson for India, Springer briefs in Environmental Science
- c. T.G Sitharam, Naveen James, Sreevalsa Kolathayar, Comprehensive Seismic Zonation Schemes for Regions at Different Scales, Springer

| Sr.N<br>o | Faculty Name | Title of the Paper  | Name of<br>Journal/Conference                                  | Volume/<br>Issue   | Year of<br>publicat<br>ion | Scopus/<br>Non-Scopus | Impact<br>factor | ISSN No.  |
|-----------|--------------|---|--|--------------------|----------------------------|-----------------------|------------------|---|
| 1         | Mini, K.M.   | Structural health monitoring—An<br>integrated approach for vibration analysis<br>with wireless sensors to steel structure<br>using image processing | Lecture Notes in<br>Computational Vision<br>and Biomechanics   | 30, pp. 1595-1610  | 2019                       | Scopus/<br>SCI        |                  | ISSN: 2212-9391   |
| 2         | Mini, K.M.   | Mechanical and durability properties of<br>sisal-Nylon 6 hybrid fibre reinforced high<br>strength SCC   | Construction and<br>Building Materials                         | 204, pp. 479-491   | 2019                       | Scopus/<br>SCI        | 3.485            | ISSN: 0950-0618   |
| 3         | Mini, K.M.   | Analytical investigations on structural<br>damage identification using torsional<br>wave propagation  | Lecture Notes in Civil<br>Engineering                          | 11, pp. 1087-1095  | 2019                       | Scopus                |                  | 2366-2557   |
| 4         | Mini, K.M.   | Ultrafine GGBS and calcium nitrate as<br>concrete admixtures for improved<br>mechanical properties and corrosion<br>resistance                      | Construction and<br>Building Materials                         | 182, pp. 249-257   | 2018                       | Scopus/<br>SCI        | 3.485            | ISSN: 0950-0618   |
| 5         | Mini, K.M.   | Strengthening Steel Members with Holes<br>Under Tension Using Unidirectional<br>GFRP Sheets   | International Journal of<br>Steel Structures                   | 18(2), pp. 496-511 | 2018                       | Scopus/<br>SCI        | 0.734            | ISSN: 1598-2351 (print<br>version), ISSN: 2093-6311<br>(electronic version) |
| 6         | Mini, K.M.   | Study on reinforced concrete beams with helical transverse reinforcement  | IOP Conference Series:<br>Materials Science and<br>Engineering | 310(1),012046      | 2018                       |                       |                  | 17578981  |

| 7  | Mini, K.M.  | Fuzzy logic modeling for strength prediction of reactive powder concrete  | Advances in Intelligent<br>Systems and<br>Computing            | 632, pp. 375-386           | 2018 |                |       | 2194-5357                          |
|----|-------------|---|--|----------------------------|------|----------------|-------|------------------------------------|
| 8  | Mini.K.M    | Strength and durability studies of SCC<br>incorporating silica fume and ultra fine<br>GGBS                            | Construction and<br>Building Materials                         | 171, рр. 919-928           | 2018 | Scopus/<br>SCI | 3.485 | ISSN: 0950-0618                    |
| 9  | Mini, K.M.  | Strength Studies of SCC Incorporating<br>Silica Fume and Ultra Fine GGBS  | Materials Today:<br>Proceedings                                | 5(11), pp. 23752-<br>23758 | 2018 | Scopus         |       | 2214-7853                          |
| 10 | Mini, K.M.  | Enhancement of properties of concrete<br>using natural fibers   | Materials Today:<br>Proceedings                                | 5(11), pp. 23816-<br>23823 | 2018 | Scopus         |       | 2214-7853                          |
| 11 | Mini, K.M.  | Influence of boron carbide addition on<br>performance and neutron shielding ability<br>of cement mortar mix           | International Journal of<br>Engineering and<br>Technology(UAE) | 7(4), pp. 48-55            | 2018 | Scopus         |       | 2227524X                           |
| 12 | Mini K. M   | Influence of Mineral Admixtures and<br>Fibers on Workability and Mechanical<br>Properties of Reactive Powder Concrete | Journal of Materials in<br>Civil Engineering                   | 31(2): 04018394            | 2019 | Scopus/<br>SCI | 1.763 | 0899-1561.                         |
| 13 | Mini K M    | Effect of micro silica and aggregate size<br>on cracking of self-compacting concrete                                  | Construction Materials<br>(ICE)                                | Paper 1800080              | 2019 | Scopus         | 0.32  | ISSN 1747-650X<br>E-ISSN 1747-6518 |
| 14 | Anand, K.B. | Utilization of fly ash and ultrafine GGBS for higher strength foam concrete   | IOP Conference Series:<br>Materials Science and<br>Engineering | 310(1),<br>012070          | 2018 | Scopus         |       | 17578981                           |
| 15 | Anand, K.B. | Study on identically voided pervious<br>concrete made with different sized<br>aggregates                              | IOP Conference Series:<br>Materials Science and<br>Engineering | 310(1),<br>012064          | 2018 | Scopus         |       | 17578981                           |

Department of Civil Engineering, Amrita School of Engineering, Coimbatore

| 16 | KB.ANAND,<br>AK SHARMA        | Performance evaluation of alkali-<br>activated coal-ash aggregate in concrete  | ICE Waste &resource<br>management                              | Vol.171, Issue<br>WR1,<br>pp: 4-13 | 2018 | Scopus         | 0.175 | ISSN 1747-6526  <br>E-ISSN 1747-6534 |
|----|-------------------------------|--|--|------------------------------------|------|----------------|-------|--------------------------------------|
| 17 | Anand, K.B.                   | Utilization of recycled waste as filler in foam concrete   | Journal of Building<br>Engineering                             | Vol.19,<br>pp:154-160              | 2018 | Scopus         |       | ISSN: 2352-7102                      |
| 18 | Anand, K.B.                   | Mechanical Properties and Shear<br>Strengthening Capacity of High Volume<br>Fly Ash-Cementitious Composite             | IOP Conference Series:<br>Materials Science and<br>Engineering | 310(1),<br>012063                  | 2018 | Scopus         |       | 17578981                             |
| 19 | Anand, K.B.                   | Industrial waste utilization for foam concrete   | IOP Conference Series:<br>Materials Science and<br>Engineering | 310(1),<br>012062                  | 2018 | Scopus         |       | 17578981                             |
| 20 | Dhanya Sathyan,<br>K.B Anand  | Temperature Influence on Rheology of<br>Superplasticized Pozzolana Cement and<br>Modeling Using RKS Algorithm          | Journal of Materials in<br>Civil Engineering                   | 30(9)                              | 2018 | Scopus/<br>SCI | 1.763 | 1943-5533                            |
| 21 | Dhanya Sathyan<br>, K B Anand | Coupled effect of superplasticizer dosage<br>and fly ash content on strength and<br>durability of concrete             | Material Today:<br>Proceedings                                 | 5(11)                              | 2018 | Scopus/<br>SCI | 0.71  | 2214-7853                            |
| 22 | Dhanya Sathyan<br>, K B Anand | Microstructural and rate of water<br>absorption study on fly-ash incorporated<br>cement mortar                         | Material Today:<br>Proceedings                                 | 5(11)                              | 2018 | Scopus/<br>SCI | 0.71  | 2214-7853                            |
| 23 | Dhanya Sathyan<br>, K B Anand | Effect of superplasticizers on the rheological properties of fly ash incorporated cement paste                         | Material Today:<br>Proceedings                                 | 5(11)                              | 2018 | Scopus/<br>SCI | 0.71  | 2214-7853                            |
| 24 | Dhanya Sathyan<br>, K M Mini  | Performance of concrete using waste<br>fiber reinforeced polymer powder as a<br>partial replacement for fine aggregate | Material Today:<br>Proceedings                                 | 5(11)                              | 2018 | Scopus/<br>SCI | 0.71  | 2214-7853                            |

| 25 | Dhanya Sathyan<br>, K B Anand              | Influence of superplasticizer family on<br>the durability characteristics of fly ash<br>incorporated cement concrete                   | Construction and<br>Building Materials                              | 204(2)  | 2019 | Scopus/<br>SCI    | 3.485 | 0950-0618                                     |
|----|--|--|---|---|------|-------------------|-------|---|
| 26 | Sathyan, D.,<br>Anand, K.B.,<br>Mini, K.M. | Optimization of superplasticizer in<br>portland pozzolana cement mortar and<br>concrete  | IOP Conference Series:<br>Materials Science and<br>Engineering      | 310(1),012036   | 2018 |                   |       | 17578981                                      |
| 27 | Ananthkumar, M                             | Effect of Alkaline Solution with Varying<br>Mix Proportion on Geopolymer Mortar  | IOP Conference Series:<br>Materials Science and<br>Engineering      | Volume 310, Issue 1                                       | 2018 | Scopus            | 0.2   | 17578981                                      |
| 28 | Prakash<br>Chinnayan                       | Photocatalytic degradation of metformin<br>and amoxicillin in synthetic hospital<br>wastewater: effect of classical parameters         | International Journal of<br>Environmental Science<br>and Technology | Article in press  | 2018 | Scopus and<br>SCI | 2.037 | ISSN: 1735-1472 (Print)<br>1735-2630 (Online) |
| 29 | Prakash<br>Chinnaiyan                      | Use of TiO2 and Rice Husk Ash to study<br>the removal of Reactive Yellow Dye as<br>contaminant in water                                | Materials Today:<br>Proceedings                                     | Volume 5, Issue 11,<br>Part 3, 2018, Pages<br>24268-24276 | 2018 | Scopus            | 0.314 | ISSN: 2214-7853                               |
| 30 | Prakash<br>Chinnaiyan                      | Use of rice husk ash as an adsorbent to<br>remove contaminants in water and<br>comparison with advanced oxidation<br>process – a study | Materials Today:<br>Proceedings                                     | Volume 5, Issue 11,<br>Part 3, 2018, Pages<br>24248-24257 | 2018 | Scopus            | 0.314 | ISSN: 2214-7853                               |
| 31 | P. Rakesh                                  | Strength and durability study on cement<br>mortar with ceramic waste and micro-<br>silica  | Materials Today:<br>Proceedings                                     | Volume 5, Issue 11,<br>Part 3, 2018, Pages<br>24780-24791 | 2018 | Scopus            |       | 2214-7853                                     |
| 32 | Ramkrishnan, R.                            | Experimental Investigation on Damping<br>Property of Coarse Aggregate Replaced<br>Rubber Concrete                                      | IOP Conference Series:<br>Materials Science and<br>Engineering      | 310 (1), 012003   | 2018 | Scopus            | 0.2   | doi:10.1088/1757-<br>899X/310/1/012003        |

| 33 | Ramkrishnan, R.                                    | Crumb Rubber Recycling in Enhancing<br>Damping Properties of Concrete  | IOP Conference Series:<br>Materials Science and<br>Engineering   | 310 (1), 012013  | 2018 | Scopus     | 0.2   | doi:10.1088/1757-<br>899X/310/1/012013           |
|----|--|--|--|--|------|------------|-------|--|
| 34 | R Ramkrishnana,<br>Dhanya<br>Sathyana, K M<br>Mini | Strength properties of concrete blocks<br>with Sand Manufacture Sludge as partial<br>replacement to fine aggregate | Materials Today:<br>Proceedings  | 5(11), pp. 23733-<br>23742   | 2018 | Scopus     | 0.314 | 2214-7853  |
| 35 | R Ramkrishnan,<br>Dhanya Sathyan,<br>K M Mini      | Strength properties of concrete blocks<br>with Sand Manufacture Sludge as partial<br>replacement to fine aggregate | Material Today:<br>Proceedings   | 5(11)  | 2018 | Scopus/SCI | 0.71  | 2214-7853  |
| 36 | Ramkrishnan R                                      | Effect of Mineral Admixtures on<br>Pervious Concrete   | Materials Today:<br>Proceedings 5 (2018)<br>24014–24023  | 5 (11), 24014-24023  | 2018 | Scopus     | 0.314 | https://doi.org/10.1016/j.m<br>atpr.2018.10.194  |
| 37 | Ramkrishnan R.                                     | Effect of random inclusion of sisal fibres<br>on strength behavior and slope stability of<br>fine grained soils    | Materials Today:<br>Proceedings 5 (2018)<br>25313–25322  | 5 (11), 25313-25322  | 2018 | Scopus     | 0.314 | https://doi.org/10.1016/j.m<br>atpr.2018.10.334  |
| 38 | R. Ramkrishnan                                     | Utilization of Geotextile Fabric and<br>Permeable Concrete to Prevent Coastal<br>Erosion                           | Springer International<br>Publishing New<br>Solutions for<br>Challenges in<br>Applications,of New<br>Materials and<br>Geotechnical Issues,<br>Sustainable Civil<br>Infrastructures | Civil Infrastructures<br>Confronting Severe<br>Weathers and<br>Climate Changes<br>Conference, pp.<br>144-160 | 2018 | Non-Scopus |       | https://doi.org/10.1007/97<br>8-3-319-95744-9_12 |

| 39 | R. Ramkrishnan                   | Soil Reinforcement and Slope<br>Stabilization Using Natural Jute Fibres                     | Springer International<br>Publishing New<br>Solutions for<br>Challenges in<br>Applications,of New<br>Materials and<br>Geotechnical Issues,<br>Sustainable Civil<br>Infrastructures | Civil Infrastructures<br>Confronting Severe<br>Weathers and<br>Climate Changes<br>Conference, pp.130-<br>143 | 2018 | Non-Scopus  |       | https://doi.org/10.1007/97<br>8-3-319-95744-9_11 |
|----|----------------------------------|---|--|--|------|-------------|-------|--|
| 40 | R. Ramkrishnan                   | Assessment of Mass Movements and<br>Critical Phreatic Levels in Soil Slopes                 | Springer International<br>PublishingNew<br>Solutions for<br>Challenges in<br>Applications,of New<br>Materials and<br>Geotechnical Issues,<br>Sustainable Civil<br>Infrastructures  | Civil Infrastructures<br>Confronting Severe<br>Weathers and<br>Climate Changes<br>Conference, pp.161-<br>186 | 2018 | Non-Scopus  |       | https://doi.org/10.1007/97<br>8-3-319-95744-9_13 |
| 41 | Ramkrishnan R.                   | New Attenuation Relations for North East<br>Himalayas                                       | 16th Symposium on<br>Earthquake<br>Engineering, IIT<br>Roorkee, India  | Issue 32, pp 1-10  | 2018 | Non- Scopus |       |  |
| 42 | E.Lalithprakash<br>& K.Sreevalsa | Land Use Exposure to Deterministic<br>Seismic Hazard in Delhi National Capital<br>Territory | Geotechnical Special<br>Publication  | Volume 2018-June,<br>Issue GSP 291,<br>2018, Pages 135-<br>145   | 2018 | Scopus      | 0.269 | 8950563  |

| 43 | E.Lalithprakash<br>& K.Sreevalsa | Development of Earthquake Readiness<br>Index Tool to Assess Individual<br>Earthquake Preparedness Level   | ASCE India<br>Conference 2017<br>(Geotechnical Special<br>Publication) | Urbanization<br>Challenges in<br>Emerging<br>Economies:<br>Resilience and<br>Sustainability of<br>Infrastructure, pg<br>no:149 - 155 | 2018 | Scopus (yet<br>to appear) | 0.269 | https://doi.org/10.1061/97<br>80784482032.016 |
|----|----------------------------------|---|--|--|------|---------------------------|-------|---|
| 44 | Poornima V                       | Strength and durability study of sulphur concrete with replaced fine aggregate  | Materials Today:<br>Proceedings  | 5 (11) pp-23888–<br>23897  | 2018 | Scopus                    | 0.314 | ISSN: 2214-7853                               |
| 45 | Anil Kumar<br>Sharma             | Evaluating the effectiveness of ecological<br>restoration of hard bank rivers: A case<br>study from Shedu river port, China                         | Journal of Water<br>Supply: Research and<br>Technology – AQUA          | 67(8)  | 2018 | Scopus                    | 1.179 | ISSN:0003-7214                                |
| 46 | Anil Kumar<br>Sharma             | Strength tests and model experiments on soil reinforced with areca and PVA fibers   | Indian Geotechnical<br>Conference, 13-15,<br>Dec 2018, Bangalore.      | NA   | 2018 | non- Scopus               |       |   |
| 47 | Sharma, A.K.,<br>Anand, K.B.     | Comparative study on synthesis and<br>properties of geopolymer fine aggregate<br>from fly ashes   | Construction and<br>Building Materials                                 |  | 2019 | Scopus/SCI                | 3.485 | ISSN: 0950-0618                               |
| 48 | Haridharan, M.K                  | Experimental study on functionally<br>graded steel fibre reinforced preplaced<br>aggregate concrete   | International Journal of<br>Engineering and<br>Technology(UAE)         |  | 2018 | Scopus                    |       | 2227524X                                      |
| 49 | Haridharan,<br>M.K.              | A four novel energy pattern factor<br>method for computation of weibull<br>parameter in impact strength reliability of<br>fibre-reinforced concrete | International Journal of<br>Engineering and<br>Technology(UAE)         |  | 2018 | Scopus                    |       | 2227524X                                      |

| 50 | Haridharan.M.K                | Influence of treated natural jute fiber on flexural properties of reinforced concrete beams  | International Journal of<br>Engineering and<br>Technology(UAE)                 |                            | 2018 | Scopus      |      | 2227524X                            |
|----|-------------------------------|--|--|----------------------------|------|-------------|------|-------------------------------------|
| 51 | M.K. Haridharan               | Statistical scrutiny of variations in impact<br>strength of green high performance fibre<br>reinforced concrete subjected to drop<br>weight test | Revista Română de<br>Materiale / Romanian<br>Journal of Materials              | 48 (2),214 -221            | 2018 | Scopus      | 0.23 | ISSN 2457-502X, ISSN-L<br>1583-3186 |
| 52 | B. Soundharajan               | Effect of reservoir zones and hedging<br>factor dynamism on reservoir adaptive<br>capacity for climate change impacts                            | Proc. IAHS   | 379                        | 2018 | Scopus      | 0.22 | 1447815                             |
| 53 | Bankaru-Swamy<br>Soundharajan | Effect of reservoir zones and hedging<br>factor dynamism on reservoir adaptive<br>capacity for climate change impacts                            | International<br>Association of<br>Hydrological Sciences.                      |                            | 2018 |             |      |                                     |
| 54 | Mithun Mohan                  | Influence of Conflicting Stream's<br>Composition on Critical Gap at<br>Unsignalized Intersections  | 98th Annual Meeting<br>of Transportation<br>Research Board,<br>Washington D. C |                            | 2019 | Non-scopus  |      |                                     |
| 55 | Sruthy S                      | Design of floatable monolithic<br>breakwater structure to ensure tranquility<br>in port and harbor basins  | International Journal of<br>Engineering &<br>Technology                        | 7 (4.5) (2018) 736-<br>741 | 2018 | Non- Scopus |      | 2227524X                            |
| 56 | Sruthy S                      | Investigation on the use of cold formed<br>perforated steel sections as columns and<br>purlins   | International Journal of<br>Engineering &<br>Technology                        | 7 (4.5) (2018) 716-<br>721 | 2018 | Non- Scopus |      | 2227524X                            |
| 57 | Sruthy S,<br>K M Mini         | Seismic and blast loading performance of<br>a gypsum panelled prefabricated building   | International Journal of<br>Engineering &<br>Technology                        | 7 (4.5) (2018) 669-<br>677 | 2018 | Non- Scopus |      | 2227524X                            |

| 58 | Sruthy S       | A study on fatigue life of RC bridge and<br>its improvement methods   | International Journal of<br>Engineering &<br>Technology               | 7 (4.5) (2018) 722-<br>727 | 2018 | Non- Scopus | 2227524X |
|----|----------------|---|---|----------------------------|------|-------------|----------|
| 59 | Sruthy, S.     | A comparison of fatigue life<br>improvement methods for an existing<br>offshore Jacket platform structure                             | International Journal of<br>Engineering and<br>Technology(UAE)        | 7(4), pp. 333-340          | 2018 | Scopus      | 2227524X |
| 60 | Kolathayar, S. | Geotechnical considerations for the<br>concept of coastal reservoir at Mangaluru<br>to impound the flood waters of Netravati<br>River | Marine Georesources<br>and Geotechnology                              |                            | 2018 |             |          |
| 61 | Sreevalsa.k    | Seismic Bearing Capacity Factor<br>Considering Composite Failure<br>Mechanism: Pseudo-Dynamic Approach                                | International Journal of<br>Geotechnical<br>Earthquake<br>Engineering | Vol no 9(1), pp. 65-<br>77 | 2018 | Scopus      |          |

| S No  | Ecoulty Nome | Title of the Deper  | Name of   | Volume/                                      | Year of     | Scopus/    | Impact | Citation | ICON No    |
|-------|--------------|---|---|--|-------------|------------|--------|----------|------------|
| 5.110 | Faculty Mame | The of the raper  | Journal/Conference  | Issue  | publication | Non-Scopus | factor | Citation | 1351N INU. |
| 1)    | Mini, K.M.   | Study on corrosion resistance in<br>concrete by mineral admixture addition<br>and FRP wrapping of reinforcement<br>bars | International Journal of<br>Civil Engineering and<br>Technology | 8(10), pp. 988-<br>1000                      | 2017        | Scopus     |        | 1        | 0976-6308  |
| 2)    | Mini.K.M     | Novel hybrid composites based on<br>glass and sisal fiber for retrofitting of<br>reinforced concrete structures         | Construction and Building<br>Materials                          | 133, pp. 146-<br>153                         | 2017        | Scopus/SCI | 3.485  | 9        |            |
| 3)    | K. M. MINI   | Study on silica infused recycled<br>aggregate concrete using design of<br>experiments                                   | Journal of Engineering<br>Science and Technology                | 12(4), pp. 958-<br>971                       | 2017        | scopus     |        | 5        |            |
| 4)    | Anand, K.B.  | PVA fiber - Fly ash cementitious<br>composite: Assessment of mechanical<br>properties                                   | International Journal of<br>Civil Engineering and<br>Technology | Vol.8, Issue<br>10,<br>pp: 647-658           | 2017        | Scopus     |        | 2        | 0976-6308  |
| 5)    | K.B.Anand    | Strength and Durability of Rammed<br>Earth for Walling  | J. Archit. Eng., 2017,  | Vol.23, No.4,<br>06017004-1 to<br>06017004-6 | 2017        | Scopus     |        | 1        | 1076-0431  |
| 6)    | K.B.Anand    | Performance evaluation of PVA fiber<br>reinforced concrete  | The Indian Concrete<br>Journal                                  | Vol.91,<br>Issue.9,<br>pp:30-36              | 2017        | Scopus     |        | 2        | 194565     |

| 7)  | K.B.Anand                                     | Properties of cement grout modified<br>with ultra-fine slag   | Front. Struct. Civ. Eng.   | Vol.12, No.1, pp:58-66                | 2017 | Scopus     | 1.58  | 4 | 2095-2430          |
|-----|---|---|--|---------------------------------------|------|------------|-------|---|--------------------|
| 8)  | K.B. Anand and<br>Anil Kumar Sharma           | Performance evaluation of alkali-<br>activated coal-ash aggregate in concrete   | Proceedings of Institution<br>of Civil Engineers: Waste<br>and Resource Management | Volume 171,<br>Issue 1, Pages<br>4-13 | 2018 | Scopus     | NA    | 2 | ISSN:1747-<br>6526 |
| 9)  | Dhanya Sathyan.,<br>Anand, K.B.               | Studies on rheological properties of superplasticised PPC paste   | International Journal of<br>Civil Engineering and<br>Technology                    | 8(10)                                 | 2017 | Scopus     | 0.42  | 3 | 0976-6308          |
| 10) | Dhanya Sathyan,<br>Anand, K.B., Mini,<br>K.M. | Optimization of superplasticizer in<br>portland pozzolana cement mortar and<br>concrete                                     | IOP Conference Series:<br>Materials Science and<br>Engineering                     | 310(1)                                | 2018 | Scopus     | 0.32  | 0 | 1757-8981          |
| 11) | Dhanya Sathyan.,<br>Anand, K.B.               | Modelling the minislump spread of<br>superplasticized PPC paste using RLS<br>with the application of Random<br>Kitchen sink | IOP Conference Series:<br>Materials Science and<br>Engineering                     | 310(1)                                | 2018 | Scopus     | 0.32  | 0 | 1757-8982          |
| 12) | Dhanya Sathyan.,<br>Anand, K.B.               | Comparison of ANN and RKS approaches to model SCC strength  | IOP Conference Series:<br>Materials Science and<br>Engineering                     | 310(1)                                | 2018 | Scopus     | 0.32  | 1 | 1757-8984          |
| 13) | Dhanya Sathyan.,<br>Anand, K.B.,              | Modeling the Fresh and Hardened<br>Stage Properties of Self-Compacting<br>Concrete using Random Kitchen Sink<br>Algorithm   | International Journal of<br>Concrete Structures and<br>Materials                   | DOI<br>10.1186/s4006<br>9-018-0246-7. | 2018 | Scopus/SCI | 2.737 | 3 | 2234-1315          |

| 14) | Ananth Kumar, M.  | Characteristic study on concrete Steel<br>double skinned tubes and Concrete<br>filled steel tubes under Axial<br>compressive strength       | International Journal of<br>Civil Engineering and<br>Technology   | Volume 8,<br>Issue 10,<br>October 2017,<br>Pages 1120-<br>1130 | 2017 | Scopus            |       | 2 | 9766308  |
|-----|---|---|---|--|------|-------------------|-------|---|--|
| 15) | Ananthkumar, M.,<br>Dhanya Sathyan.,                                | Study on Effectiveness of Processed<br>and Unprocessed Black Liquor pulps in<br>improving the properties of PPC<br>mortar, Concrete and SCC | IOP Conference Series:<br>Materials Science and<br>Engineering  | 310(1)   | 2018 | Scopus            | 0.32  | 0 | 1757-8983  |
| 16) | Prakash Chinnaiyan  | Effect of dyeing and textile industry on<br>noyyal river water quality, tiruppur – a<br>case study  | International Journal of<br>Civil Engineering and<br>Technology   | Vol 8, Issue<br>10, pp. 1064-<br>1071                          | 2017 | Scopus            | 0.246 | 1 | 0976-6308  |
| 17) | Prakash Chinnayan,<br>K. M. Mini                                    | Pharmaceutical products as emerging<br>contaminant in water: relevance for<br>developing nations and identification of<br>critical          | Environmental Monitoring<br>and Assessment  | 190(5),288   | 2018 | Scopus and<br>SCI | 1.8   | 2 | ISSN: 0167-<br>6369 (Print)<br>1573-2959<br>(Online) |
| 18) | Ramkrishnan, R.   | Stabilization of seepage induced soil<br>mass movements using sand drains   | Geotechnical Engineering  | 48 (4), pp. 129-<br>137  | 2017 | Scopus            | 0.31  | 1 | 0046-5828  |
| 19) | E. Lalith Prakash,<br>Sreevalsa<br>Kolathayar and R.<br>Ramkrishnan | Seismic Risk Assessment for<br>Coimbatore Integrating Seismic Hazard<br>and Land Use  | Springer International<br>PublishingNew Solutions<br>for Challenges in<br>Applications,of New<br>Materials and Geotechnical | GeoShanghai<br>International<br>Conference,<br>pp.117-124      | 2018 | Non-Scopus        |       | 1 | Online<br>ISBN 978-<br>981-13-<br>0128-5             |

|     |                  |   | Issues, Sustainable Civil<br>Infrastructures                                 |  |       |        |       |   |                    |
|-----|------------------|---|--|--|-------|--------|-------|---|--------------------|
| 20) | E Lalith Prakash | Study on concrete containing Waste<br>Foundry Sand, Fly Ash and<br>Polypropylene fibre using Taguchi<br>Method            | Materials Today:<br>Proceedings 00 (2017)<br>0000–0000<br>www.materialstoday | Volume 5,<br>Issue 11, 2018,<br>Pages 23964-<br>23973          | 2017  | Scopus | 0.314 |   | 22147853           |
| 21) | Surya.M          | Stability study on eco-friendly Flexible pavement using E-waste and Hips  | International Journal of<br>Civil Engineering and<br>Technology              | Volume 8,<br>Issue 10,<br>October 2017,<br>Pages 956-965       | 2017  | Scopus |       | 1 | 9766308            |
| 22) | Poornima V.      | Study on absorbency of superabsorbent<br>polymer in water and cement pore fluid<br>and its incorporation in cement mortar | International Journal of<br>Civil Engineering and<br>Technology              | Volume 8,<br>Issue 10,<br>October 2017,<br>Pages 1131-<br>1140 | 2017  | Scopus |       |   | 9766308            |
| 23) | Poornima V.      | Influence of ureolytic bacteria in<br>improving performance characteristics<br>of concrete                                | Eco. Env. & Cons. 2017;<br>pp  | 23(September),<br>pp. S57-S63                                  | 2017  | Scopus | 0.28  |   | ISSN:0971-<br>765X |
| 24) | Poornima V.      | Enhancement of crack healing<br>efficiency and performance of SAP in<br>biocrete  | IOP Conference Series:<br>Materials Science and<br>Engineering               | Volume 310,<br>Issue 1,<br>012061                              | 43160 | Scopus | 0.2   |   | 1757-8981          |

|     |                                 | An Investigational study on   | International Journal of  | Volume 119   |      |            |       |   | ISSN: 1314-                   |
|-----|---------------------------------|---|---|--|------|------------|-------|---|-------------------------------|
| 25) | Poornima V.                     | metakaolin-amended bio  | Pure and Applied  | No. 12, 1051-  | 2018 | Non-Scopus | 0.29  |   | 3395                          |
|     |                                 | concrete  | Mathematics   | 1060   |      |            |       |   |                               |
| 26  | Anil Kumar Sharma               | Synthesis and characterization of green<br>composites: Focus on accelerated<br>strength, ductility and durability                           | Indoor and Built<br>Environment   | Volume 27,<br>Issue 5,   | 2018 | Scopus/SCI | 1.158 | 0 | ISSN:<br>1420326X             |
| 27  | Anil Kumar Sharma               | Transforming urban waste into<br>construction blocks for a sanitation<br>infrastructure: A step towards<br>addressing rural open defecation | GHTC 2017 - IEEE Global<br>Humanitarian Technology<br>Conference, Proceedings | Volume 2017-<br>January, 22<br>December<br>2017, Pages 1-<br>9 | 2017 | Scopus     | NA    | 0 | ISBN: 978-<br>150906046-<br>7 |
| 28  | Anil Kumar<br>Sharma, K.B.Anand | Performance appraisal of coal ash<br>stabilized rammed earth  | Journal of Building<br>Engineering  | Volume 18  | 2018 | scopus     | NA    | 0 | ISSN: 2352-<br>7102           |
| 29  | Anil Kumar Sharma               | Strength Behavior of Subgrade Soil<br>mixed with Sand Manufacturing Dust<br>and Fiber   | Journal of Geo<br>Engineering   | Vol. 13, Issue: 2, pp: 79-84.                                  | 2018 | scopus     | NA    | 0 | ISSN:1990-<br>8326            |
| 30  | Anil Kumar Sharma               | Soil stabilization using bottom ash and<br>areca fiber: Experimental investigations<br>and reliability analysis                             | ASCE Journal of Materials<br>in Civil Engineering.                            | Vol. 30, Issue:<br>8.  | 2018 | Scopus/SCI | 1.43  | 2 | ISSN<br>(print):<br>0899-1561 |
| 31  | Anil Kumar Sharma               | Green Quaternary concrete composites:<br>Characterization and evaluation of the<br>mechanical properties                                    | Structural Concrete (Wiley online),   | Vol. 19, pp:<br>1280-1289.                                     | 2018 | Scopus/SCI | 1.384 | 0 | ISSN:1751-<br>7648            |

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| 32 | B. Soundharajan                           | Effect of dynamically varying zone-<br>based hedging policies on the<br>operational performance of surface<br>water reservoirs during climate change | Geological Society,<br>London, Special<br>Publications   | 488                          | 2018 | Scopus     | 0.9 | 0 | 3058719   |
|----|---|--|--|------------------------------|------|------------|-----|---|-----------|
| 33 | Sreevalsa<br>Kolathayar, R<br>Ramkrishnan | Feasibility of creating a fresh water<br>reservoir in the Arabian Sea<br>impounding the flood waters of<br>Netravathi River                          | Journal of Sustainable<br>Urbanization, Planning and<br>Progress (2017) - Volume<br>2, Issue 2 | Vol 2, Issue 2,<br>pp. 38-42 | 2017 | Non-Scopus |     | 3 | 2424-9882 |
| 34 | Rahul.T.M,<br>Verma.A                     | The influence of stratification by<br>motor-vehicle ownership on the impact<br>of built environment factors in Indian<br>cities                      | Journal of Transport<br>Geography  |                              | 2017 | Scopus     |     |   |           |

# Table B.5.8.1.3 List of Publications for the AY 2016-17

| S. No | Faculty Name  | Title of the Paper   | Name of Journal/Conference                                     | Volume/<br>Issue  | Year of publication | Scopus/<br>Non-<br>Scopus | Impact<br>factor | Citation | ISSN No./<br>DOI   |
|-------|---|--|--|---|---------------------|---------------------------|------------------|----------|--|
| 1     | Mini, K.M.  | Study on concrete with partial replacement of cement by rice husk ash  | IOP Conference Series:<br>Materials Science and<br>Engineering | 149(1),012109   | 2016                | Scopus                    |                  | 3        | 1757-8981  |
| 2     | Mini, K.M.  | Influence of silica based carbon nano tube composites in concrete  | Advanced Composites Letters                                    | 26(1), pp. 12-17  | 2017                | Scopus/<br>SCI            | 0.422            |          | 0963-6935  |
| 3     | K. M. MINI  | Structural damage detection through<br>longitudinal wave propagation using<br>spectral finite element method           | Geomechanics and Engineering                                   | 12(1), pp. 161-<br>183  | 2017                | Scopus and SCI            | 1.818            | 2        | ISSN: 2005-<br>307X(Print),<br>ISSN: 2092-<br>6219(Online) |
| 4     | Dhanya Sathyan ,<br>K M Mini                                  | Study on performance of concrete with<br>over-burnt bricks aggregates and micro-<br>silica admixture                   | IOP Conference Series:<br>Materials Science and<br>Engineering | 149(1)  | 2016                | Scopus                    | 0.32             | 1        | 1757-8981  |
| 5     | Ramkrishnan R,<br>Prakash.C,<br>Lalithprakash,<br>Ananthkumar | Micro Water Distribution Networks: A<br>participatory method of sustainable water<br>distribution in rural communities | IEEE 2016 Global<br>Humanitarian Technology<br>Conference      | 2016 IEEE<br>Global<br>Humanitarian<br>Technology<br>Conference<br>(GHTC)<br>pp : 797-804 | 2016                | Scopus                    |                  | 2        | DOI:<br>10.1109/GHTC<br>.2016.7857369                      |

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| 6  | Ramkrishnan R.       | Study on effect of Microbial Induced<br>Calcite Precipitates on strength of fine<br>grained soils  | Perspectives in Science                                    | Vol 8, Recent<br>Trends in<br>Engineering and<br>Material<br>Sciences,<br>pp.198-202 | 2016 | Non-Scopus |       | 17 | ISSN: 2213-<br>0209 |
|----|----------------------|--|--|--|------|------------|-------|----|---------------------|
| 7  | Anil Kumar<br>Sharma | Stabilization of fly ash and lime sludge<br>composites: Assessment of its<br>performance as base course<br>material                        | Archives of Civil and<br>Mechanical Engineering            | Vol. 17, Issue: 3,<br>pp: 475-485  | 2017 | Scopus/SCI | 2.763 | 6  | ISSN: 1644-<br>9665 |
| 8  | Anil Kumar<br>Sharma | Study on quaternary concrete micro-<br>structure, strength, durability considering<br>the influence of multi-factors                       | Construction and Building<br>Materials                     | Volume 139   | 2017 | Scopus/SCI | 3.485 | 8  | ISSN: 0950-<br>0618 |
| 9  | Anil kumar<br>sharma | Fly Ash and GGBS Mixtures for<br>Geotechnical and Geo-Environmental<br>Applications  | Geo-Chicago 2016 GSP 272                                   |  | 2016 |            |       |    |                     |
| 10 | P. Sunitha,          | Idealised bilinear moment-curvature<br>curves of RC sections for pushover<br>analysis of RC frame buildings                                | Indian Concrete Journal                                    | April 2016, Vol.<br>90, Issue 4, pp.<br>43-54  | 2016 | Scopus     |       |    |                     |
| 11 | P. Sunitha,          | Seismic behaviour of RC moment<br>resisting frame buildings designed and<br>detailed as per first revision of IS 13920<br>draft provisions | Indian Concrete Journal                                    | April 2016, Vol.<br>90, Issue 4, pp.<br>64-71  | 2016 | Scopus     |       |    |                     |
| 12 | Sruthy, S.,          | Use of recycled brick masonry waste in concrete  | International Journal of Earth<br>Sciences and Engineering | 9(2), 02090218,<br>pp. 541-544   | 2016 | Scopus     |       |    |                     |

### PhD Guidance

| Academic Year | Number of supervisors | Number of PhD<br>Scholars<br>(Cumulative) | Ph.D awarded |
|---------------|-----------------------|---|--------------|
| 2018-2019     | 5                     | 16  | 1            |
| 2017-2018     | 3                     | 7   |              |
| 2016-2017     | 3                     | 5   |              |

# Table B.5.8.1.4 Details of PhD Guidance for AY 2018-19

| SI.<br>No | Faculty Name             | Name of Student     | Reg.No               | Part<br>time/Full<br>Time | Scholars<br>hip<br>Details | Area of<br>research         | Status                              |
|-----------|--------------------------|---------------------|----------------------|---------------------------|----------------------------|-----------------------------|-------------------------------------|
| 1         | Dr.K.B.Anand             | Dhanya Sathyan      | CB.EN.D*CVL1<br>2001 | Part time                 | No                         | Structural<br>Engineering   | Completed                           |
| 2         | Dr.K.M.Mini              | Mr.M.Ananthkumar    | CB.EN.D*CVL1<br>5001 | Part time                 | No                         | Structural<br>Engineering   | Comprehensi<br>ve Exam<br>Completed |
| 3         | Dr.K.B.Anand             | Mr.E.Lalith Prakash | CB.EN.D*CVL1<br>5005 | Part time                 | No                         | Geotechnical<br>Engg        | Qualifying<br>Exam<br>Completed     |
| 4         | Dr.K.B.Anand             | Mr. J.Premkumar     | CB.EN.D*CVL1<br>6001 | Part time                 | No                         | Structural<br>Engineering   | Course work<br>completed            |
| 5         | Dr. Anil Kumar<br>Sharma | Ms.M.Surya          | CB.EN.D*CVL1<br>6002 | Part time                 | No                         | Geotechnical<br>Engineering | Comprehensi<br>ve Exam<br>completed |
| 6         | Dr.Anil Kumar<br>Sharma  | Ms. L.Prathipa      | CB.EN.D*CVL1<br>7001 | Part time                 | No                         | Geotechnical<br>Engineering | Comprehensi<br>ve Exam<br>completed |
| 7         | Dr.K.M.Mini              | Ms.S.Sruthy         | CB.EN.D*CVL1<br>7002 | Part time                 | No                         | Structural<br>Engineering   | Coursework<br>Completed             |
| 8         | Dr.Haridharan.<br>M.K    | Ms.Aswini K B       | CB.EN.D*CVL1<br>8001 | Part time                 | Yes                        | Structural<br>Engg          | Undergoing<br>coursework            |
| 9         | Dr.K.M.Mini              | Ms. Amritha Raj     | CB.EN.D*CVL1<br>8002 | Full time                 | Yes                        | Materials                   | Undergoing<br>coursework            |
| 10        | Dr.Anil Kumar<br>Sharma  | Mr. Vishnu Vijayan  | CB.EN.D*CVL1<br>8003 | Part time                 | No                         | Sustainable construction    | Undergoing<br>coursework            |

| 11 | Dr.Haridharan.  | Ms. Riyana MS               | CB.EN.D*CVL1   | Part time  | No  | Sustainable  | Undergoing  |            |
|----|-----------------|-----------------------------|----------------|------------|-----|--------------|-------------|------------|
|    | M.K             | ·                           | 8004           |            |     | construction | coursework  |            |
| 12 | Dr K M Mini     | Mr. Soda Prabhath           | CB.EN.D*CVL1   | Part time  | No  | Construction | Undergoing  |            |
| 12 | DI.K.M.Mini,    | Ranjan Kumar                | 8005           |            | NO  | Materials    | coursework  |            |
| 13 | Dr K B Anand    | Mr. Vighnesh R              | CB.EN.D*CVL1   | Part time  | No  | Energy       | Undergoing  |            |
| 15 | DI.K.D.Ananu,   | wir. vigninesii K           | 8006 Part time |            | NO  | efficient    | coursework  |            |
|    |                 |                             |                |            |     | construction |             |            |
|    |                 |                             |                |            |     | engineering  |             |            |
| 14 | Dr.Haridharan.  | Lakshmi Elizabeth           | CB.EN.D*CVL1   | Doutting   | Ne  | and          | Undergoing  |            |
| 14 | M.K             | Joseph                      | 8009-PT        | r art time | INO | management,  | coursework  |            |
|    |                 |                             |                |            |     | structural   |             |            |
|    |                 |                             |                |            |     | engineering  |             |            |
| 15 | Dr V M Mini     | Harich Mohan T              | CB.EN.D*CVL1   | Dort time  | No  | Sustainable  | Undergoing  |            |
| 15 | DI.K.M.MIIII,   | Jr.K.M.Mini, Harish Mohan T |                | Fait time  | NO  | Construction | coursework  |            |
|    | Dr B Soundharai |                             | CB FN D*CVI 1  |            |     | Remote       | Undergoing  |            |
| 16 | on              | Thangakarthick P            | 2008 ET        | Full time  | Yes | Sensing and  | coursework  |            |
|    | all             |                             | 0000-Г 1       |            |     | GIS          | COULSEWOLK  |            |
| 17 | Dr K B Anand    | Krina K M                   | CB.EN.D*CVL1   | Part time  | No  | Structural   | Undergoing  |            |
| 17 | Dr.K.B.Anand    | Dr.K.B.Anand Kr             | Kiipa K Wi     | 8007-PT    |     | INU          | Engineering | coursework |

| Sl.<br>No | Faculty Name              | Name of<br>Student     | Reg.No           | Part<br>time/<br>Full<br>Time | Scholar<br>ship<br>Details | Area of<br>research         | Status                              |
|-----------|---------------------------|------------------------|------------------|-------------------------------|----------------------------|-----------------------------|-------------------------------------|
| 1         | Dr.K.B.Anand              | Dhanya Sathyan         | CB.EN.D*CVL12001 | Part time                     | No                         | Structural<br>Engineering   | Open<br>Seminar<br>Completed        |
| 2         | Dr.K.M.Mini               | Mr.M.Ananthku<br>mar   | CB.EN.D*CVL15001 | Part time                     | No                         | Structural<br>Engineering   | Comprehensi<br>ve Exam<br>Completed |
| 3         | Dr.K.B.Anand              | Mr.E.Lalith<br>Prakash | CB.EN.D*CVL15005 | Part time                     | No                         | Geotechnical<br>Engg        | Qualifying<br>Exam<br>Completed     |
| 4         | Dr.K.B.Anand              | Mr.<br>J.Premkumar     | CB.EN.D*CVL16001 | Part time                     | No                         | Structural<br>Engineering   | Course work<br>completed            |
| 5         | Dr. Anil Kumar<br>Sharma, | Ms.M.Surya             | CB.EN.D*CVL16002 | Part time                     | No                         | Geotechnical<br>Engineering | Undergoing<br>coursework            |
| 6         | Dr.Anil Kumar<br>Sharma   | Ms. L.Prathipa         | CB.EN.D*CVL17001 | Part time                     | No                         | Geotechnical<br>Engineering | Undergoing<br>coursework            |
| 7         | Dr.K.M.Mini               | Ms.S.Sruthy            | CB.EN.D*CVL17002 | Part time                     | No                         | Structural<br>Engineering   | Undergoing<br>coursework            |

# **Table B.5.8.1.5** Details of PhD Guidance for AY 2017-18

| Sl.<br>No | Faculty Name             | Name of<br>Student     | Reg.No           | Part<br>time/Full<br>Time | Scholar<br>ship<br>Details | Area of<br>research         | Status                          |
|-----------|--------------------------|------------------------|------------------|---------------------------|----------------------------|-----------------------------|---------------------------------|
| 1         | Dr.K.B.Anand             | Dhanya<br>Sathyan      | CB.EN.D*CVL12001 | Part time                 | No                         | Structural<br>Engineering   | Qualifying<br>Exam<br>completed |
| 2         | Dr.K.M.Mini              | Mr.M.Ananth<br>kumar   | CB.EN.D*CVL15001 | Part time                 | No                         | Structural<br>Engineering   | Undergoing<br>coursework        |
| 3         | Dr.K.B.Anand             | Mr.E.Lalith<br>Prakash | CB.EN.D*CVL15005 | Part time                 | No                         | Geotechnical<br>Engg        | Undergoing<br>coursework        |
| 4         | Dr.K.B.Anand             | Mr.<br>J.Premkumar     | CB.EN.D*CVL16001 | Part time                 | No                         | Structural<br>Engineering   | Undergoing<br>coursework        |
| 5         | Dr. Anil Kumar<br>Sharma | Ms.M.Surya             | CB.EN.D*CVL16002 | Part time                 | No                         | Geotechnical<br>Engineering | Undergoing<br>coursework        |

Table B.5.8.1.6 Details of PhD Guidance for AY 2016-17

### 5.8.2. Sponsored Research

Funded research from outside:

(Provide a list with Project Title, Funding Agency, Amount and Duration)

\Funding Amount (Cumulative during CAYm1, CAYm2, CAYm3):

| S.No | Name of the                      | Project title   | Funding  | Amount  | Period/                       |
|------|----------------------------------|---|--|---------|-------------------------------|
|      | Investigators                    |   | agencies   | (Lakhs) | Duration                      |
| 1    | Dr. Soundharajan B               | Understanding Impacts of<br>El-Nino events on the<br>Indian Agricultural<br>Productivity (UNITE)<br>(only for travel to the UK,<br>administered by Heriot-<br>Watt University | Heriot-Watt<br>University<br>(GCRF<br>funding by<br>Scottish<br>Govt.) | 2.5     | 6 months<br>(Apr-Sep<br>2019) |
| 2    | Dr. Soundharajan B               | Impacts of recent El-Niño<br>Southern Oscillation<br>(ENSO) on the Water-<br>Food-Energy Nexus in<br>South Asia   | Swedish<br>Research<br>Council   | 61      | 3 years<br>2019-2021          |
| 3    | Dr. Soundharajan B               | Water and Energy<br>Efficient Irrigation System<br>(Water-ERIS): Solar<br>energy and cloud-based<br>decision support systems<br>for automated irrigation<br>system            | MHRD –<br>IMPRINT-2  | 19      | 3 years<br>2019-2021          |
| 4    | Dr.K.M.Mini<br>Dr.Dhanya Sathyan | Development of high<br>volume fly ash foam<br>concrete wall panel using<br>rice straw as thermal<br>insulation material   | DST-Habitat<br>Energy call   | 38.566  | 3years<br>2016-2019           |
| 5    | Mr.Ramkrishnan                   | Use of geo-textile fabric<br>and pervious concrete to<br>prevent coastal erosion in<br>sandy soil beaches in<br>Kerala  | Government<br>of Kerala  | 1.25    | 6 months<br>2016              |
| 6    | Dr. Mithun Mohan                 | Financial Assistance to Dr.<br>Mithun Mohan for<br>participating in "98th<br>Annual Meeting of<br>Transportation Research<br>Board (TRB), USA                                 | DST-SERB   | 2       | 1 year<br>2018-19             |
|      |                                  |   | 5  | 124.310 |                               |

Table B.5.8.2.1 List of Sanctioned Projects

## Amount > 50 Lacs – 20 Marks,

Amount > 40 and < 50 Lacs -15 Marks,

Amount > 30 and < 40 Lacs - 10 Marks,

Amount > 15 and < 30 Lacs - 5 Marks,

Amount < 15 Lacs - 0 Marks

# 5.8.3 Development activities

## 1) Product Development

| Table B.5.8.3.1 | List of Products | Developed in | the Department |
|-----------------|------------------|--------------|----------------|
|                 |                  | Developed in | the Department |

| Sl. | Faculty           | Name of     | Year | Details of Product                               |
|-----|-------------------|-------------|------|--|
| No  |                   | product     |      |  |
| 1   | Dr.K.M. Mini      | Foam        | 2018 | A wall panel incorporating rice straw into foam  |
|     | Dr.Dhanya Sathyan | concrete    |      | concrete to improve thermal efficiency.          |
|     |                   | wall panel  |      |  |
| 2   | Dr.Anil Kumar     | Geo-        | 2018 | Geopolymerization of fly ash amorphous silica    |
|     | Sharma            | polymer     |      | mixtures is employed to produce fine aggregates  |
|     |                   | flyash sand |      | as a possible replacement to river sand.         |
|     |                   |             |      |  |
| 3   | Ms. V Poornima    | Bio-        | 2017 | Concrete with the addition of Bacteria to aid in |
|     |                   | Concrete    |      | the self-healing capacity and also to improve    |
|     |                   |             |      | various mechanical properties.                   |
|     |                   |             |      |  |
| 4   | Ms. V Poornima    | Sulphur     | 2017 | Sulphurcrete is composed of coarse aggregate,    |
|     |                   | Concrete    |      | fine aggregate, fly ash and melted Sulphur,      |
|     |                   |             |      | mixed at a temperature above 1200 C to get a     |

| - |                |            | r    | 1   |
|---|----------------|------------|------|---|
|   |                |            |      | homogeneous mixture. Unlike PCC, SC gain its  |
|   |                |            |      | 90% of the mechanical properties within 24  |
|   |                |            |      | hours of casting.   |
|   |                |            |      |   |
| 5 | Dr.Sreevalsa K | Geo-cell   | 2016 | The possibility of using naturally available low-   |
|   |                | from Areca |      | cost areca leaf sheaths as an alternative to the  |
|   |                |            |      | commercially available HDPE Geocell.  |
|   |                |            |      | $ \begin{array}{c} \\ \hline \\ $ |
| 6 | Dr.K.M. Mini   | Boron      | 2015 | Infusion of finely grained B <sub>4</sub> C in cement   |
|   |                | concrete   |      | concrete increases the neutron attenuation  |
|   |                |            |      | coefficient.  |
|   |                |            |      |   |

#### 2) Research laboratories

The Department is having three research laboratories which are functioning under the Regular laboratories. These labs are established with the support of funding from Govt. agencies like DST and by using Internal funding from the University. Main purpose of this lab is to provide the required research facilities in various emerging areas of Civil engineering. The detail of projects undergone in these labs along with the major equipment's available and the resulting publications are listed below.

## High performance concrete Lab (Under Construction Materials lab)

Utilization rate - 80% - through projects

| Sl. | Major Equipment        | Cost    | Company /Make |
|-----|------------------------|---------|---------------|
| No  |                        |         |               |
|     |                        |         |               |
| 1   | Viscometer             | 4 lakhs | Brookfield    |
| 2   | SCC equipment          | 50,000  | AIMIL         |
| 3   | Marsh cone, Mini slump | 50,500  | AIMIL         |

Table B.5.8.3.2 List of Major Equipment's Available in High performance concrete Lab

| Vear      | No. of | Title of the Project   |
|-----------|--------|--|
| Projects  |        |  |
|           |        | • Modelling of fresh and hardened properties of SCC using      |
|           |        | regularized least square approach.                             |
| 2015 16   | 2      | • Modelling the workability of superplasticized PPC paste      |
| 2013 - 10 | 3      | using RLS with the application of RKS.                         |
|           |        | • Influence of test temperature on rheological properties of   |
|           |        | superplasticised PPC paste.                                    |
|           |        | • Durability study in flyash based superplasticized PPC mortar |
|           |        | • Short term and long term hardened properties of flyash based |
|           |        | superplasticized concrete.                                     |
|           |        | • Coupled effect of temperature and superplasticizer dosage on |
| 2016 -17  | 5      | the rheological properties of cement paste containing class F  |
|           |        | flyash and modelling of rheological properties.                |
|           |        | • Effect of superplasticizer on setting time of concrete       |
|           |        | • Strength and durability studies of SCC incorporating silica  |
|           |        | fume and ultra-fine GGBS.                                      |
| 2017 10   | 1      | • Study on structural behavior of Hybrid fiber reinforced Self |
| 2017 - 18 | 1      | compacting concrete  |
| 2018 10   | 1      | • Damping and strength of FRP confined crumb rubber            |
| 2010 - 19 | 1      | concrete square column (On going)                              |

Table B.5.8.3.3 List of Projects completed in the High performance concrete Lab

### Publications

- Rahesh Hari, K M Mini, (2019) "Mechanical and durability properties of sisal-nylon 6 hybrid fibre reinforced high strength SCC", Construction and Building Materials, 204, pp.479-491
- Ardra Mohan, Mini K M, (2018) "Strength and Durability studies of SCC incorporating silica fume and ultra-fine GGBS" Construction and Building Materials ,171, 919–928
- Sowmini Gopinathan, K B Anand, (2018) "Properties of cement grout modified with ultra-fine slag", Frontiers of Structural and Civil Engineering, 12(1), pp. 58–66
- Dhanya Sathyan, K B Anand, Aravind J Prakash and Pemjith B (2018), "Modeling of fresh and hardened stage properties of self-compacting concrete using random kitchen sink algorithm", International journal of concrete structures and materials, Springer, DOI 10.1186/s40069-018-0246-7.
- Dhanya Sathyan, Anand, K.B. and Sindu Menon, M. (2018). "Temperature influence on rheology of superplasticized pozzolana cement and modeling using random kitchen sink algorithm." Journal of materials in civil engineering, ASCE, DOI: 10.1061/(ASCE) MT.1943-5533.0002406.
- Ardra Mohan, Mini K M, (2018) "Strength Studies of SCC Incorporating Silica Fume and Ultra Fine GGBS" Materials Today: Proceedings 5(11), pp. 23752-23758
- Dhanya Sathyan, K B Anand, K M Mini and Aparna S (2018), "Optimization of superplasticizer in portland pozzolana cement mortar and concrete", IOP conference series, Volume 310, DOI:10.1088/1757-899X/310/1/012036.
- Dhanya Sathyan, K B Anand, Chinnu Jose and Aravind N R (2018), "Modelling the mini slump spread of superplasticized PPC paste using RLS with the application of random kitchen sink", IOP conference series, Volume 310. DOI:10.1088/1757-899X/310/1/012035.
- Aravind J Prakash , Dhanya Sathyan, K B Anand and Aravind N R (2018) , "Comparison of ANN and RKS approaches to model SCC strength, IOP conference series, Volume 310. DOI:10.1088/1757-899X/310/1/012037.
- Ananthkumar M, Dhanya Sathyan, Prabha S, (2018) "Study on Effectiveness of Processed and Unprocessed Black liquor pulps in improving the properties of PPC mortar, Concrete and SCC", Material today proceeding, IOP Conf. Series: Materials Science and Engineering 310 012038 doi:10.1088/1757-899X/310/1/012038
- Sindhu Menon.M, Dhanya Sathyan, and K.B.Anand (2017), "Studies on Rheological Properties of Superplasticised PPC Paste, International Journal of Civil Engineering and Technology. Volume 8, Issue 10, pp 939–947.
- Dhanya Sathyan, K.B.Anand and K.M.Mini (2016), "Experimental Study on Portland Pozzolana Cement-Superplasticiser compatibility in mortar", International journal of earth science and engineering, Vol. 09, No.02, pp 539-544.

- Manomi N, Dhanya Sathyan , K B Anand "Coupled effect of superplasticizer dosage and fly ash content on strength and durability of concrete", Material today proceeding.
- Aparna S,Dhanya Sathyan and K B Anand, "Microstructural and rate of water absorption study on fly-ash incorporated cement mortar", Material today proceeding
- Rojin C Robert, Dhanya Sathyan , K B Anand, "Effect of superplasticizers on the rheological properties of fly ash incorporated cement paste", Material today proceeding

# Energy efficient materials lab (Under Structures lab)

Utilization Rate -80% - through projects

Major Equipment's

| Sl. | Major Equipment             | Cost     | Company/Make |
|-----|-----------------------------|----------|--------------|
| 1   | Foam generator              | 52000/-  | LCM          |
| 2   | Hot guarded plate apparatus | 141600/- | ALMECH       |

Table B.5.8.3.3 Details of the major Equipment in Energy efficient materials lab

|   | Hot press      |          |   |
|---|----------------|----------|---|
| 3 |                | 93810/-  | Mech static<br>Engineering              |
|   | Impedance tube |          |   |
| 4 |                | 515000/- | Sree Balaji Engineering<br>& Equipments |

Table B.5.8.3.4 List of Projects completed in the Energy efficient materials lab

| Year                     | No. of<br>Projects | Title of the Project  |
|--------------------------|--------------------|---|
| <b>Year</b><br>2017 – 18 | <b>Projects</b>    | <ol> <li>Title of the Project</li> <li>Development of High Volume Fly Ash Foam Concrete<br/>Wall Panel Using Rice Straw as Thermal Insulation<br/>Material</li> <li>Light Weight Insulating Material Prepared from Rice<br/>husk incorporated with Foam concrete</li> <li>Study on performance of hybrid fiber reinforced foam<br/>concrete.</li> <li>Effect of perlite on the thermo-mechanical and<br/>durability properties of foam concrete</li> <li>A study on performance of EPS sandwich foam</li> </ol> |
|                          |                    | concrete wall panel   |

|         |   | 1. Improvement of thermal and acoustic properties in     |
|---------|---|--|
|         |   |  |
|         |   | Essen approved using augenoone fiber                     |
|         |   | Foam concrete using sugarcane noer.                      |
|         |   |  |
| 2018-19 |   | 2. Thermal Efficiency in Foam concrete using thermocol   |
| 2010 17 |   | 2. Therman Enterency in Fourier concrete using thermotor |
|         | 2 | L - 11 -   |
|         | _ | balls  |
|         |   |  |
|         |   |  |

#### **Salient Publications (under review)**

- Amritha Raj, Dhanya Sathyan, Mini K.M "Physical and Functional Characteristics of Foam concrete: A Review Construction & Building Materials", Ref. No.: CONBUILDMAT-D-18-05052.
- Shrook S, Dhanya Sathyan,KM Mini, Effect Of Expanded Perlite Aggregate On The Thermo-Mechanical And Durability Properties Of Foam Concrete, Journal of Building Engineering, Reference: JOBE\_2018\_785
- Aravind N.R, Dhanya Sathyan,KM Mini, Rice Husk Incorporated Foam Concrete as a Insulating Material, Sustainable Cities and Society
- Bhagyasree raj, Dhanya Sathyan, Mini K M, Study on performance of hybrid fibre reinforced foam concrete, Journal of materials in civil engineering, ASCE, Ref.No: MTENG-7901
- Sarath Chandra, Amritha Raj, Dhanya Sathyan, Mini K M, "A study on performance of eps sandwich foam concrete wall panel", Energy Efficiency, Springer, Manuscript No. ENEF\_ D-19-00100

#### Advanced water treatment research lab (under Environmental Engineering)

Utilization rate - 70% - through projects

| Sl. No | Major Equipment   | Cost   | Company/Make |
|--------|---|--------|--------------|
| 1      | Immersion Type Photo Reactor -<br>Advanced oxidation UV/Visible –<br>1000 ml photoreactor | 146839 | HERBER       |
| 2      | Centrifuge shaker   | 14200  | REMI         |
| 3      | Digital Water Analyser  | 49500  | ELICO        |
| 4      | Orbital shaker  | 55000  | Neo lab      |
| 5      | BOD incubator   | 50820  | KEMI         |
| 6      | Auto Clave  | 108816 | KEMI         |

Table B.5.8.3.5 List of Major Equipment in Advanced water treatment research lab

| <b>X</b> 7 | No. of   |  |
|------------|----------|--|
| Year       | Projects | Title of the Project   |
| 2015– 16   | 2        | <ol> <li>Ecotoxicity tests on fresh water organisms for<br/>water contaminants</li> <li>Treatment of emerging contaminants in water -<br/>carbamazepine and felodipine using advanced<br/>oxidation process</li> </ol>   |
| 2016 -17   | 3        | <ol> <li>Removal of azo dye and amoxcillin as<br/>contaminants in water using advanced oxidation<br/>process and adsorption</li> <li>Study on removal of reactive yellow dye and<br/>other emerging contaminants in water<br/>employing adsorption and advanced oxidation<br/>process</li> <li>Kinetic study of adsorption and advanced<br/>oxidation process on acid orange 7 and other<br/>emerging contaminants in water</li> </ol> |
| 2017 – 18  | 2        | <ol> <li>Photocatalytic degradation of recalcitrant<br/>contaminants and its management - a study</li> <li>Degradation of reactive violet dye using<br/>advanced oxidation process</li> </ol>  |
| 2018 - 19  | 1        | Degradation of amiodarone as emerging contaminant<br>using advanced oxidation process  |

Table B.5.8.3.6 List of Projects completed in the Advanced water treatment research lab

# **Salient Publications**

 Prakash Chinnaiyan, Santosh G Thampi, Mathava Kumar, K M Mini, 2018. Pharmaceutical products as emerging contaminant in water: relevance for developing nations and identification of critical compounds for Indian environment. Environ Monit Assess, 190(288), pp.1 – 13. (SCI e, Scopus, IF – 1.9)

- Akshaya A, Prakash Chinnaiyan, Dhanya Unni, Keerthana G, Use of TiO2 and Rice Husk Ash to study the removal of Reactive Yellow Dye as contaminant in water", International Conference on Advances in Materials and Manufacturing Applications, Aug 17-19, 2017 (Scopus indexed- IConAMMA\_2017)
- Swarnalakshmi K S,Prakash Chinnaiyan, Nivetha S, Athira S Nair, Use of Rice husk ash as an adsorbent to remove contaminants in water and comparison with advanced oxidation process - a study, International Conference on Advances in Materials and Manufacturing Applications, Aug 17 -19, 2017 (Scopus indexed IConAMMA\_2017)

# Major Proposals submitted from the lab

- Project proposal submitted to DST-WTI-Mission mode, 2017 for the project titled "Improvement of ground water quality and ground water recharge through rejuvenation of Ganganarayansamudharam pond in Perur Chettipalayam, Coimbatore" for an amount of 69.24 lakhs
- Project proposal submitted to SYST 2017 (Scheme for Young Scientist, DST) for the project titled 'Development of portable water treatment unit for removal of critical pharmaceutical compounds in Indian water for an amount of Rs.20.82 lakhs
- Project proposal submitted under section 35 (Amrita Vishwa Vidyapeetham) for the project titled 'Treatment of emerging contaminants in water using advanced oxidation process for an amount of Rs.43.67 lakhs on 10.1.17
- Project proposal submitted to SYST 2015 (Scheme for Young Scientist, DST) for the project titled 'Treatment of pharmaceutical and personal care products using advanced oxidation processes' for an amount of Rs.14 lakhs

# 3) Instructional Materials

- Construction scheduling and management (Primavera)
- Concrete mix Design
- Laboratory manuals

| S.No | Working model/Charts                                     |
|------|--|
| 1    | Light weight concrete Canoe                              |
| 2    | Light weight Ferro cement concrete canoe                 |
| 3    | Slope stability model                                    |
| 4    | Rammed earth building                                    |
| 5    | Photoreactor (AOP) for treatment of emerging contaminant |
| 6    | Charts – Relevant to Laboratory purposes                 |

#### 4) Working models/charts/monograms:

# 5.8.4. Consultancy (from Industry)

(Provide a list with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during CAYm1, CAYm2, CAYm3):

Amount >10 Lacs – 20 Marks,

Amount <10 and > 8 Lacs -15 Marks,

Amount < 8 and > 6 Lacs-10 Marks,

Amount < 6 and > 4 Lacs-5 Marks,

Amount < 4 and > 2 Lacs-2 Marks,

Amount <2 Lacs -0 Mark

#### Table B.5.8.4.1 Consultancy details

| Sl.no | Campus        | School<br>Department<br>Names of the<br>consultants |       | Name of<br>consultancy<br>project       | Consulting/S<br>ponsoring<br>agency with<br>contact<br>details | Revenue<br>Generated (in<br>Rupees) | Year  |      |
|-------|---------------|---|-------|---|--|-------------------------------------|-------|------|
| 1     | Ettima<br>dai | ASE   | Civil | M/S OCTAMER<br>Technologies,<br>Chennai | M/S OCTAMER<br>Technologies, Plasticizer Civil E               |                                     | 30000 | 2018 |
| 2     | Ettima<br>dai | ASE   | Civil | IIT Palakkad                            | IIT Palakkad Concrete Department of<br>Analysis Civil Engg     |                                     | 10000 | 2018 |
| 3     | Ettima<br>dai | ASE   | Civil | Elgi Ultra Industries<br>Limited        | Test report  | Department of<br>Civil Engg         | 4200  | 2018 |
| 4     | Ettima<br>dai | ASE   | Civil | RK Ready mix<br>concrete Pvt Ltd        | Project<br>/WR/RK  | Department of<br>Civil Engg         | 500   | 2017 |
| 5     | Ettima<br>dai | ASE   | Civil | Elgi Ultra Industries<br>Limited        | Civil<br>Consultancy   | Department of<br>Civil Engg         | 200   | 2017 |
| 6     | Ettima<br>dai | ASE   | Civil | Elgi Ultra Industries<br>Limited        | Civil<br>Consultancy   | Department of<br>Civil Engg         | 4200  | 2017 |
| 7     | Ettima<br>dai | ASE   | Civil | Railway<br>Department                   | Material<br>Testing  | Department of<br>Civil Engg         | 1000  | 2015 |
|       |               |   |       | Total                                   |  |                                     | 51000 |      |

#### **5.9.** Faculty Performance Appraisal and Development System (FPADS)

The institute has a well-defined and comprehensive faculty performance appraisal and development system. The self-appraisal form is collected once in a year at the end of academic year, which is evaluated by the Head of the Department and forwarded to the Dean-Engineering.

The management constitutes an expert committee to review the performance of the faculty and provides feedback for further corrections/improvements.

Points are assigned to all the criteria and each faculty is evaluated based on the points they have acquired. They should satisfy the minimum requirements in all the various heads like, teaching, research & consultancies, awards & recognitions, departmental activities and campus/university administrative activities. A schematic representation of the self-appraisal report is presented in the flow chart below.



Fig. B.5.9.1 Faculty Performance Appraisal and Development System

Refer Annexure B. 5. I for model Faculty Performance and appraisal form.

#### 5.10. Visiting/Adjunct/Emeritus Faculty etc.

Adjunct faculty also includes Industry experts. Provide details of participation and contributions in teaching and learning and /or research by visiting/adjunct/Emeritus faculty etc. for all the assessment years:

Provision of visiting/adjunct faculty (1)

Minimum 50 hours per year interaction with adjunct faculty from industry/retired professors etc. (9)

(Minimum 50 hours interaction in a year will result in 3 marks for that year; 3 marks x 3years= 9marks)

| <b>S.</b> | Adjunct Professor                                 |  |  |  |  |  |  |
|-----------|---|--|--|--|--|--|--|
| No        |   |  |  |  |  |  |  |
| 1         | Prof.Katta Venkataramana                          |  |  |  |  |  |  |
|           | Professor of Civil Engineering                    |  |  |  |  |  |  |
|           | Department of Civil Engineering                   |  |  |  |  |  |  |
|           | National Institute of Technology, Karnataka       |  |  |  |  |  |  |
| 2         | Dr. Sanjay Kumar Shukla                           |  |  |  |  |  |  |
|           | Associate Professor and Program Leader            |  |  |  |  |  |  |
|           | Discipline of Civil and Environmental Engineering |  |  |  |  |  |  |
|           | School of Engineering, Edith Cowan University     |  |  |  |  |  |  |
|           | Australia   |  |  |  |  |  |  |
| 3         | Prof. Vellore .S. Gopalaratnam, Ph.D., P.E.       |  |  |  |  |  |  |
|           | Professor of Civil Engineering                    |  |  |  |  |  |  |
|           | Department of Civil and Environmental Engineering |  |  |  |  |  |  |
|           | University of Missouri-Columbia                   |  |  |  |  |  |  |
|           | Columbia, Missouri 65211-2200                     |  |  |  |  |  |  |

Table B.5.9.1 List of Adjunct Faculty

| Sl.<br>No | Adjunct<br>Professor         | Date                          | Event   | No. of hours |
|-----------|------------------------------|-------------------------------|---|--------------|
| 1         | Dr. Sanjay<br>Kumar Shukla   | 21.09.18                      | International Short Course on<br>"Subsurface Construction and<br>Maintenance Using Geosynthetics"   | 6            |
| 2         | Dr.Vellore S<br>Gopalaratnam | 1.12.2018<br>to<br>30.12.2018 | <ul> <li>1-month Full Bright Specialist Visit:</li> <li>Final year elective course on<br/>"Pre-stressed concrete</li> <li>International seminar on<br/>"Precast Prestressed concrete<br/>for infrastructure applications"</li> <li>FDP on "Experimental<br/>Mechanics"</li> </ul> | 150          |
|           |                              | Total n                       | o. of hours   | 156          |

| Sl.<br>No | al. Adjunct Date Event       |                           | No. of hours  |    |
|-----------|------------------------------|---------------------------|---|----|
| 1         | Dr.Vellore S<br>Gopalaratnam | 11.01.2016-<br>12.01.2016 | Two days' workshop on<br>"Fracture Mechanics of<br>Concrete"  | 14 |
| 2         | Dr.Katta<br>Venkataramana    | 22.04.2016-<br>23.04.2016 | Two day International<br>Conference on "Emerging and<br>Sustainable Technologies for<br>Infrastructure Systems"<br>during April 22-23, 2016 | 6  |
|           |                              | Total no. of              | f hours   | 20 |

| <b>CRITERION 6</b> | Facilities and Technical Support | 80 |
|--------------------|----------------------------------|----|

#### 6.1 Adequate and well equipped laboratories, and technical manpower

- Well equipped laboratories with proper lighting and ventilation are exclusively allotted for all courses specified in the curriculum.
- Experimental set up are well laid out for the smooth conduct of experiments.
- Each lab is provided with seating facility for 30 students to do the data analysis.
- All the labs are available to the students for project work even after the regular working time.
- Safety measures like fire extinguishers and First-aid facilities are provided in the lab.

All the laboratories have separate technical supporting staff with adequate qualification. Service of post graduate students also is utilized for additional technical support in all the laboratories.

Table B.6.1 Details of Laboratory

| q          | Name of   | No. of<br>students  | Name of the   | Weekly<br>utilization<br>status (all                                | Technical Manpower support        |                                  |  |  |
|------------|---|---|---|---|-----------------------------------|----------------------------------|--|--|
| Sr.<br>No. | the<br>Laboratory                                 | per<br>setup (Bat<br>ch Size)   | important<br>equipment  | the<br>courses<br>for which<br>the lab is<br>utilized)              | Name of the<br>technical<br>staff | Designation                      | Qualification  |  |
| 1.         | Strength of<br>Materials<br>laboratory            | Civil<br>Aero<br>Chemical<br>30 students per batch<br>(4 students per set up)<br>Mechanical<br>15 students per batch<br>(3 students per set up) | <ul> <li>Universal Testing Machine- 400kN</li> <li>Universal Testing Machine – 400kN</li> <li>Impact Test - Izod (168 J)</li> <li>Impact Test- Charpy (300 J)</li> <li>CompressionTestingMachine</li> <li>Spring Testing Machine</li> <li>Torsion Testing Machine</li> <li>Brinell Hardness Test</li> <li>Rockwell Hardness Test</li> <li>Tensile Testing Machine</li> <li>Fatigue Testing Machine</li> </ul> | Odd Semester:93%<br>(28/30×100)<br>Even Semester:32%<br>(10/30×100) | K.Srinivasan<br>T.Balasundaram    | Senior<br>Instructor<br>Lab Asst | ITI Machinist<br>D.M.E<br>B.E. Mechanical<br>Engg.<br>H.Sc         |  |
| 2.         | Construction<br>Material<br>Testing<br>Laboratory | Civil<br>30 students per batch<br>(4 students per set up)   | <ul> <li>Elcometer</li> <li>UPV metre</li> <li>Rebound Hammer</li> <li>Flow Table For Concrete</li> <li>Core Drilling Machine</li> <li>Los Angeles Abrasion Testing Machine</li> <li>Mortar Mixer</li> </ul>  | Odd Semester:67%<br>(20/30×100)                                     | Bindya<br>Balakrishnan            |                                  | Diploma in Civil<br>Engineering<br>A.M.I.E in Civil<br>Engineering |  |

| Morter Vibrator   |                   |           |  |
|---|-------------------|-----------|--|
| Iviorial vibrator   |                   |           |  |
| Vibrating Table   |                   |           |  |
| Flexure Testing Machine                                       |                   |           |  |
| Ductility Testing Machine                                     |                   |           |  |
| <ul> <li>Marshall Testing Machine</li> </ul>                  |                   |           |  |
| <ul><li>Sieve Shaker with sieve set</li></ul>                 | Even Semester:80% |           |  |
| <ul> <li>Flow Table For Mortar</li> </ul>                     | (24/30×100)       |           |  |
| Vee-bee Consistometer   |                   |           |  |
| Concrete Mixer  |                   |           |  |
| <ul> <li>Tar Viscometer</li> </ul>                            |                   |           |  |
| <ul> <li>Compaction Factor Apparatus</li> </ul>               |                   |           |  |
| <ul><li>Bulk Density Measure (Set of Two)</li></ul>           |                   |           |  |
| Density Basket  |                   |           |  |
| <ul><li>Air Permeability</li></ul>                            |                   |           |  |
| (BlaineType)Apparatus   |                   |           |  |
| Bitumen Extractor   |                   |           |  |
| ➢ Hot Air Oven  |                   |           |  |
| <ul><li>Vicat's Apparatus</li></ul>                           |                   | Senior    |  |
| Concrete Penetrometer   |                   | Lab       |  |
| Ring & Ball Apparatus   |                   | Assistant |  |
| <ul> <li>Electronic Weighing Balance</li> </ul>               |                   |           |  |
| Mechanical Weighing Balance                                   |                   |           |  |
| Needle vibrator   |                   |           |  |
| Flow Table for self compacting Concrete                       |                   |           |  |
| > Pycnometer  |                   |           |  |
| <ul> <li>Lechatelier flask for Specific gravity of</li> </ul> |                   |           |  |
| Cement  |                   |           |  |
| Length gauge and Elongation gauge                             |                   |           |  |
| Le- chatelier mould for soundness test                        |                   |           |  |
| <ul> <li>Length comparator</li> </ul>                         |                   |           |  |
| <ul> <li>Centrifuge shaker</li> </ul>                         |                   |           |  |

|    |               |                         | $\checkmark$ | Universal Pentrometre                 |                    |                |           |                  |
|----|---------------|-------------------------|--------------|---------------------------------------|--------------------|----------------|-----------|------------------|
|    |               |                         | ≻            | Consolidation Apparatus (single)      |                    |                |           |                  |
|    |               |                         | ≻            | Direct Shear Apparatus                |                    |                |           |                  |
|    |               |                         | ≻            | Unconfined Compression Test Apparatus | Odd Semester:47%   |                |           |                  |
|    |               |                         | ≻            | Triaxial Shear Test Apparatus         | (14/300×100)       |                |           |                  |
|    |               |                         | ≻            | Permeability Apparatus                |                    |                |           |                  |
|    |               |                         | ≻            | CBR Apparatus                         | Even Semester:40%  |                |           |                  |
|    |               |                         | ≻            | Automatic Compactor                   | (12/30×100)        |                |           |                  |
|    |               |                         | ≻            | Sample Extruder                       |                    |                |           |                  |
|    |               |                         | ≻            | Electronic                            |                    |                |           |                  |
|    |               |                         | We           | eighing Balance                       |                    |                |           | Diploma in Civil |
|    |               | Civil                   | ≻            | Hot Air Oven                          |                    |                |           | Engineering      |
|    | Geotechnical  |                         | ≻            | Consolidation Apparatus (3gang)       |                    |                | Lab       |                  |
| 3. | Engineering   | 20 students nen hetek   | ≻            | Infrared Moisture Meter               |                    | Kavitha KK     | Assistant | A.M.I.E in Civil |
|    | Laboratory    | (4 students per set up) | ≻            | Field density apparatus(sand pouring  |                    |                |           | Engineering      |
|    |               | (4 students per set up) |              | &Core cutter)                         |                    |                |           | (Pursuing)       |
|    |               |                         | ≻            | Sieve Shaker                          |                    |                |           |                  |
|    |               |                         | ≻            | Constant Temperature Bath             |                    |                |           |                  |
|    |               |                         | ≻            | Proctor Penetrometer                  |                    |                |           |                  |
|    |               |                         | ≻            | Pipette Analysis Apparatus            |                    |                |           |                  |
|    |               |                         |              | Soil Hydrometer                       |                    |                |           |                  |
|    |               |                         | ≻            | Liquid Limit Device                   |                    |                |           |                  |
|    |               |                         |              | Hand Operated Extractor               |                    |                |           |                  |
|    |               |                         |              | Light & Heavy Compaction Apparatus    |                    |                |           |                  |
|    |               |                         |              | Vane Shear Apparatus                  |                    |                |           |                  |
|    |               | Civil                   |              |                                       | 0.11.0             |                |           |                  |
|    | <b>-</b>      |                         |              | Hot Plate With Magnetic Stirrer       | Odd Semester:40%   |                |           | Diploma in Civil |
| 4  | Environmenta  |                         |              | Nicro Controller Based Colorimeter    | $(12/30\times100)$ |                |           | Engineering      |
| 4. | I Engineering | 30 students per batch   |              | Refrigerator                          | E C                | T.Vishnuprasad | Assistant |                  |
|    | Laboratory    | (3 students per set up) |              | B.U.D.Incubator                       | Even Semester:60%  |                |           |                  |
|    |               |                         |              | Mume Furnace                          | (18/30×100)        |                |           |                  |

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|    |            |                          | ➢ pH Meter                                     |                       |               |            | A.M.I.E in Civil |
|----|------------|--------------------------|--|-----------------------|---------------|------------|------------------|
|    |            |                          | <ul> <li>Digital Nephelometer</li> </ul>       |                       |               |            | Engineering      |
|    |            |                          | <ul> <li>Jar Test Apparatus</li> </ul>         |                       |               |            | (pursuing)       |
|    |            |                          | <ul> <li>C.O.D Assembly Apparatus</li> </ul>   |                       |               |            | A O              |
|    |            |                          | <ul> <li>Vortex Shaker</li> </ul>              |                       |               |            |                  |
|    |            |                          | Single Stage Distillation Unit                 |                       |               |            |                  |
|    |            |                          | <ul> <li>Revolutionary Centrifuge</li> </ul>   |                       |               |            |                  |
|    |            |                          | <ul> <li>Hot Air Oven</li> </ul>               |                       |               |            |                  |
|    |            |                          | Electronic Weighing Balance                    |                       |               |            |                  |
|    |            |                          | Micro Pipette                                  |                       |               |            |                  |
|    |            |                          | ➢ B.O.D.Incubator                              |                       |               |            |                  |
|    |            |                          | ➢ Waterbath - Rectangular                      |                       |               |            |                  |
|    |            |                          | 6  |                       |               |            |                  |
|    |            |                          | Total station(Trimple)                         |                       |               |            |                  |
|    |            |                          | Total station(Pentax)                          |                       |               |            |                  |
|    |            |                          | > GPS  |                       |               |            |                  |
|    |            |                          | > Theodolite                                   |                       |               |            |                  |
|    |            |                          | <ul> <li>Automatic Level</li> </ul>            |                       |               |            |                  |
|    |            |                          | Dumpy Level                                    |                       |               |            |                  |
|    |            |                          | <ul><li>Plane Table with Accessories</li></ul> |                       |               |            |                  |
|    |            |                          | <ul><li>Prismatic compass</li></ul>            |                       |               |            |                  |
|    |            | Circil                   | Leveling Staff 4 & 5 m(Folding type)           |                       |               |            |                  |
| 5  | Surveying  | CIVII                    | > Tape (30m &15 m)                             |                       |               |            |                  |
| 5. | Laboratory |                          | Metric Chain (20 & 30 m)                       | Odd Semester: 20%     |               |            |                  |
|    |            | 30 students per batch    | <ul> <li>Digital Planimeter</li> </ul>         | $(6/30 \times 100)$   | Thangamani. V | Lah        | Diploma in Civil |
|    |            | (4 students per set up)  | <ul> <li>Surveyors Compass</li> </ul>          | (0/30×100)            |               | Instructor | Engineering      |
|    |            | ( i students per set up) | <ul> <li>Clinometer Compass</li> </ul>         | Evan Samastar: 12 33% |               | instructor |                  |
|    |            |                          | <ul> <li>Optical Square</li> </ul>             | $(4/30 \times 100)$   |               |            |                  |
|    |            |                          | Ranging Rod                                    | (4/30×100)            |               |            |                  |
|    |            |                          | Cross Staff                                    |                       |               |            |                  |
|    |            |                          |  |                       |               |            |                  |
|    |            |                          |  |                       |               |            |                  |

| 6. | Structural<br>Engineering<br>Laboratory |  | <ul> <li>Loading Frame</li> <li>Foam Generator</li> <li>Pan mixer</li> <li>Tile Abrasion Testing Machine</li> <li>Shake Table</li> <li>Electro Chemical Work Station SP300</li> <li>Air Compressor</li> <li>Mortar Mixer</li> <li>Impact Testing Machine For Concrete</li> <li>Accelerated Curing Tank</li> <li>Data Acquisition System</li> <li>Load cell with Digital Display (15 &amp; 30 ton)</li> <li>Multimeter</li> </ul> | Odd Semester:13.33%<br>(4/30×100)<br>Even Semester:20%<br>(6/30×100) | Anchu Mol.A | Lab<br>Assistant | B.E.<br>Civil<br>Engineering |
|----|---|--|--|--|-------------|------------------|------------------------------|
|----|---|--|--|--|-------------|------------------|------------------------------|

### 6.2. Laboratories maintenance and overall ambiance

- Well equipped labs are maintained with the help of Laboratory supporting staffs.
- Yearly maintenance of the equipment's are carried out by external agencies under the supervision of concerned faculty in charge and lab staff. The maintenance details are documented in the maintenance register.
- Periodical in house maintenance like cleaning, oiling etc. are carried out by the concerned lab staff and displayed in the lab.
- The batch size of the students is such that they can comfortably perform the experiments on each instrument.
- Sufficient ventilation and lighting is provided in each lab. The maintenance schedule carried out in strength of materials laboratory is presented in Table B.6.2.

|        | Maintenance / Service Shedule (2018-2019) |    |      |      |        |           |         |          |          |         |          |       |       |     |
|--------|---|----|------|------|--------|-----------|---------|----------|----------|---------|----------|-------|-------|-----|
| Sl no. | Equipments<br>Name                        | No | June | July | August | September | October | November | December | January | February | March | April | May |
| 1      | Universal<br>Testing<br>Machine           |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |
| 2      | Compression<br>Machine                    |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |
| 3      | Universal<br>Testing<br>Machine           |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |
| 4      | Izod (168 J)                              |    |      |      |        |           |         |          | Х        |         | Y        |       |       |     |
| 5      | Charpy (300 J)                            |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |
| 6      | Compression<br>TestingMachin<br>e         |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |
| 7      | Spring Testing<br>Machine                 |    |      |      |        |           |         |          | Х        |         | Y        |       |       |     |
| 8      | Torsion<br>Testing<br>Machine             |    |      |      |        |           |         |          | X        |         | Y        |       |       |     |

 Table B.6.2 Maintenance Schedule

| 0  | Brinell                                     |  |  |  |  |  | v | V |  |  |
|--|---|--|--|--|--|--|---|---|--|--|
| 9  | Hardness                                    |  |  |  |  |  | Λ | ľ |  |  |
| 10   | Rockwell                                    |  |  |  |  |  | v | V |  |  |
| 10   | Hardness                                    |  |  |  |  |  | Λ | I |  |  |
| 11   | Tensile                                     |  |  |  |  |  | v | V |  |  |
| 11   | Machine                                     |  |  |  |  |  | Λ | I |  |  |
| 12   | Fatigue Testing                             |  |  |  |  |  | v | V |  |  |
| 12   | Machine                                     |  |  |  |  |  | Λ | I |  |  |
| X = Planned date of maintenance $(06/12/18)$ |   |  |  |  |  |  |   |   |  |  |
| Y =  | Y = Actual date of maintenance $(07/02/19)$ |  |  |  |  |  |   |   |  |  |

The labs with well-equipped facilities are made available for academic and consultancy project works. Laboratories are open on all working days with extended working hours favoring the students. These facilities are made available on holidays, as well, depending on demand. Each laboratory has a faculty -in -charge who will take care of the purchase of new equipment's and periodical maintenance.

In order to update the recent developments and to improve the technical knowledge/skill of the lab staffs, they are encouraged to participate in workshops/invited talks organized by the Department as well as other institutions.

#### 6.3. Safety measures in laboratories

Adequate safety measures are available and displayed at prominent places in each laboratory. The list of safety measures are listed in Table B.6.3. Students are instructed about the Do's and Don'ts of each laboratory.

| Sl. No. | Name of the Laboratory               | Safety measures   |
|---------|--------------------------------------|---|
| 1       | Strength of Materials Laboratory     | Fire Extinguisher, First Aid Box  |
| 2       | Construction Materials Laboratory    | Fire Extinguisher, First Aid Box, Mask,<br>Gloves, Helmet, Concrete Safety Shoe |
| 3       | Geotechnical Engineering Laboratory  | Fire Extinguisher, First Aid Box, Mask, Gloves                                  |
| 4       | Environmental Engineering Laboratory | Fire Extinguisher, First Aid Box,<br>Goggles, Mask, Gloves                      |
| 5       | Surveying Laboratory                 | Fire Extinguisher, First Aid Box, Cap   |
| 6       | Structural Engineering Laboratory    | Fire Extinguisher, First Aid Box, Mask,<br>Gloves                               |

 Table B.6.3 Safety Measures of Laboratory

#### 6.4. Project laboratory

The Department is having three research laboratories which are functioning under the Regular laboratories. These labs are established with the support of funding from Govt. agencies like DST in addition to the seed funding from the university. Main purpose of these labs are providing the required research facilities in various emerging areas of Civil engineering. The details of projects undergone in these labs along with the major equipment available and the resulting publications are listed from section 6.4.1 through 6.4.3.

### 6.4.1. High performance concrete Lab (Under Construction Materials lab)

Utilization rate - 80% - through projects

| Sl.No | Major Equipment        | Cost     | Company    |
|-------|------------------------|----------|------------|
|       |                        | (Rupees) | /Make      |
| 1     | Viscometer             | 4,00,000 | Brookfield |
| 2     | SCC equipment          | 50,000   | AIMIL      |
| 3     | Marsh cone, Mini slump | 50,500   | AIMIL      |

Table B.6.4.1(a) Details of Major Equipment

| Table B.6.4.1(b) Details of the projects |
|--|
|--|

| Veen      | No. of   | Title of the Project  |  |
|-----------|----------|---|--|
| rear      | Projects |   |  |
| 2015 - 16 | 3        | <ul> <li>Modelling of fresh and hardened properties of SCC using regularized least square approach.</li> <li>Modelling the workability of superplasticized PPC paste using RLS with the application of RKS.</li> <li>Influence of test temperature on rheological properties of</li> </ul>  |  |
|           |          | superplasticised PPC paste.   |  |
| 2016 -17  | 5        | <ul> <li>Durability study in fly ash based superplasticized PPC mortar</li> <li>Short term and long term hardened properties of fly ash based superplasticized concrete.</li> <li>Coupled effect of temperature and superplasticizer dosage on the rheological properties of cement paste containing class F fly ash and modelling of rheological properties.</li> <li>Effect of superplasticizer on setting time of concrete</li> <li>Strength and durability studies of SCC incorporating silica fume and ultra fine GGBS.</li> </ul> |  |
| 2017 - 18 | 1        | • Study on structural behavior of Hybrid fiber reinforced Self compacting concrete  |  |
| 2018 - 19 | 1        | • Damping and strength of FRP confined crumb rubber concrete square column (On going)   |  |

### **Publications**

- Rahesh Hari, K M Mini, (2019) "Mechanical and durability properties of sisal-nylon 6 hybrid fibre reinforced high strength SCC", Construction and Building Materials, 204, pp.479-491
- Dhanya Sathyan, Anand, K.B. (2019). "Influence of superplasticizer family on the durability characteristics of fly ash incorporated cement concrete." Construction and Building Materials, 204, 864–874

- Ardra Mohan, Mini K M, (2018) "Strength and Durability studies of SCC incorporating silica fume and ultra fine GGBS" Construction and Building Materials ,171, 919–928
- Sowmini Gopinathan, K B Anand, (2018) "Properties of cement grout modified with ultra-fine slag", Frontiers of Structural and Civil Engineering, 12(1), pp. 58–66
- Dhanya Sathyan, K B Anand, Aravind J Prakash and Pemjith B (2018), "Modeling of fresh and hardened stage properties of self compacting concrete using random kitchen sink algorithm", International journal of concrete structures and materials, Springer, DOI 10.1186/s40069-018-0246-7.
- Dhanya Sathyan, Anand, K.B. and Sindu Menon, M. (2018). "Temperature influence on rheology of superplasticized pozzolana cement and modeling using random kitchen sink algorithm." Journal of materials in civil engineering, ASCE, DOI: 10.1061/(ASCE) MT.1943-5533.0002406.
- Manomi N, Dhanya Sathyan , K B Anand(2018), "Coupled effect of superplasticizer dosage and fly ash content on strength and durability of concrete", Material today proceeding. 5(11), Part 3, Pages 24033-2404
- Aparna S,Dhanya Sathyan and K B Anand(2018) "Microstructural and rate of water absorption study on fly-ash incorporated cement mortar", Material today proceeding Volume 5, Issue 11, Part 3, Pages 23692-23701
- Rojin C Robert, Dhanya Sathyan, K B Anand(2018). "Effect of superplasticizers on the rheological properties of fly ash incorporated cement paste", Material today proceeding, Volume 5, Issue 11, Part 3, 2018, Pages 23955-23963
- Ardra Mohan, Mini K M, (2018) "Strength Studies of SCC Incorporating Silica Fume and Ultra Fine GGBS" Materials Today: Proceedings 5(11), pp. 23752-23758
- Dhanya Sathyan, K B Anand, K M Mini and Aparna S (2018), "Optimization of superplasticizer in portland pozzolana cement mortar and concrete", IOP conference series, Volume 310, DOI:10.1088/1757-899X/310/1/012036.
- Dhanya Sathyan, K B Anand, Chinnu Jose and Aravind N R (2018), "Modelling the mini slump spread of superplasticized PPC paste using RLS with the application of random kitchen sink", IOP conference series, Volume 310. DOI:10.1088/1757-899X/310/1/012035.

- Aravind J Prakash , Dhanya Sathyan, K B Anand and Aravind N R (2018) , "Comparison of ANN and RKS approaches to model SCC strength, IOP conference series, Volume 310. DOI:10.1088/1757-899X/310/1/012037.
- Ananthkumar M, Dhanya Sathyan, Prabha S, (2018) "Study on Effectiveness of Processed and Unprocessed Black liquor pulps in improving the properties of PPC mortar, Concrete and SCC", Material today proceeding, IOP Conf. Series: Materials Science and Engineering 310 012038 doi:10.1088/1757-899X/310/1/012038
- Sindhu Menon.M, Dhanya Sathyan, and K.B.Anand (2017), "Studies on Rheological Properties of Superplasticised PPC Paste, International Journal of Civil Engineering and Technology. Volume 8, Issue 10, pp 939–947.
- Dhanya Sathyan, K.B.Anand and K.M.Mini (2016), "Experimental Study on Portland Pozzolana Cement-Superplasticiser compatibility in mortar", International journal of earth science and engineering, Vol. 09, No.02, pp 539-544.

# 6.4.2. Energy efficient materials lab (Under Structures lab)

Utilization Rate – 80% - through projects

| Sl.No | Major Equipment | Cost     | Company/Make |
|-------|-----------------|----------|--------------|
|       |                 | (Rupees) |              |
| 1     | Foam generator  | 52,000/- | LCM foam     |
|       |                 |          |              |

# Table B.6.4.2 (a) Details of Major Equipment

| 2 | Hot guarded plate apparatus | 1,41,600/- | ALMECH                                       |
|---|-----------------------------|------------|--|
|   |                             |            |  |
| 3 | Hot press                   | 93,810/-   | MechStatic<br>Engineering                    |
|   |                             |            |  |
| 4 | Impedance tube              | 5,15,000/- | Sree Balaji<br>Engineering and<br>Equipments |

| Year      | No. of<br>Projects | Title of the Project                                    |  |
|-----------|--------------------|---|--|
|           |                    | 1. Development of High Volume Fly ash Foam Concrete     |  |
|           |                    | Wall Panel Using Rice Straw as Thermal Insulation       |  |
| 2017 - 18 | 5                  | Material  |  |
|           |                    | 2. Light Weight Insulating Material Prepared from Rice  |  |
|           |                    | husk incorporated with Foam concrete                    |  |
|           |                    | 3. Study on performance of hybrid fiber reinforced foam |  |
|           |                    | concrete.   |  |
|           |                    | 4. Effect of perlite on the thermo-mechanical and       |  |
|           |                    | durability properties of foam concrete.                 |  |
|           |                    | 5. A study on performance of EPS sandwich foam          |  |
|           |                    | concrete wall panel                                     |  |
|           |                    | 1. Experimental study on the performance of sugarcane   |  |
| 2018 - 19 | 2                  | bagasse fibre reinforced foam concrete.                 |  |
|           |                    | 2. Light weight insulating materials using EPS beads in |  |
|           |                    | foam concrete   |  |

### Table B.6.4.2(b) Details of the Project

#### **Salient Publications (under review)**

- Amritha Raj, Dhanya Sathyan, Mini K.M "Physical and Functional Characteristics of Foam concrete: A Review Construction & Building Materials", Ref. No.: CONBUILDMAT-D-18-05052.
- Shrook S, Dhanya Sathyan, KM Mini, Effect Of Expanded Perlite Aggregate On The Thermo-Mechanical And Durability Properties Of Foam Concrete, Journal of Building Engineering, Reference: JOBE\_2018\_785
- Aravind N.R, Dhanya Sathyan, KM Mini, Rice husk incorporated foam concrete wall panels as a thermal insulating material in building , Indoor and Built Environment .Ref.No: IBE-18-0330
- Bhagyasree raj, Dhanya Sathyan, Mini K M ,Study on performance of hybrid fibre reinforced foam concrete, Journal of materials in civil engineering, ASCE, Ref.No: MTENG-7901
- Sarath Chandra, Amritha Raj, Dhanya Sathyan., Mini K M, "A study on performance of eps sandwich foam concrete wall panel", Energy Efficiency, Springer, Manuscript No. ENEF\_ D-19-00100

# 6.4.3. Advanced water treatment research lab (under Environmental Engineering)

Utilization rate – 70% - through projects

| Sl.No | Major Equipment   | Cost (Rupees) | Company/Make                 |
|-------|---|---------------|------------------------------|
| 1     | Immersion Type Photo<br>Reactor -<br>Advanced oxidation<br>UV/Visible – 1000 ml<br>photoreactor (Heber,<br>Chennai) | 1,46,839      | Heber Scientific,<br>Chennai |
| 2     | Centrifuge shaker   | 14,200        | REMI                         |
| 3     | Digital Water Analyser  | 49,500        | ELICO                        |
| 4     | Orbital shaker  | 55,000        | NEO LAB                      |
| 5     | BOD incubator   | 50,820        | KEMI                         |
| 6     | Auto Clave  | 1,08,816      | KEMI                         |

| Table B.6.4.3(a) Det | ails of Major | Equipment |
|----------------------|---------------|-----------|
|                      |               |           |

#### Table B.6.4.3(b) Details of the Project

| Year      | No. of   | Title of the Project   |
|-----------|----------|--|
|           | Projects |  |
| 2015 – 16 | 2        | <ol> <li>Ecotoxicity tests on fresh water organisms for<br/>water contaminants</li> <li>Treatment of emerging contaminants in water -<br/>carbamazepine and felodipine using advanced<br/>oxidation process</li> </ol>   |
| 2016 -17  | 3        | <ol> <li>Removal of azo dye and amoxcillin as contaminants<br/>in water using advanced oxidation process and<br/>adsorption</li> <li>Study on removal of reactive yellow dye and other<br/>emerging contaminants in water employing<br/>adsorption and advanced oxidation process</li> </ol> |
|           |          | 3. Kinetic study of adsorption and advanced oxidation process on acid orange 7 and other emerging contaminants in water  |
| 2017 – 18 | 2        | <ol> <li>Photocatalytic degradation of recalcitrant<br/>contaminants and its management - a study</li> <li>Degradation of reactive violet dye using advanced<br/>oxidation process</li> </ol>  |
| 2018 - 19 | 1        | 1. Degradation of amiodarone as emerging contaminant using advanced oxidation process  |

# **Salient Publications**

- Chinnaiyan, P et al., 2018a. Pharmaceutical products as emerging contaminant in water : relevance for developing nations and identification of critical compounds for Indian environment. Environ Monit Assess, 190(288), pp.1 13. (SCI e, Scopus, IF 1.9)
- Chinnaiyan, P. et al., 2018b. Photocatalytic degradation of metformin and amoxicillin in synthetic hospital wastewater : effect of classical parameters. International Journal of Environmental Science and Technology, Online. Available at: https://doi.org/10.1007/s13762-018-1935-0. (SCI e, Scopus, IF 2.2)
- Akshaya A, Prakash Chinnaiyan\*, Dhanya Unni, Keerthana G, Use of TiO2 and Rice Husk Ash to study the removal of Reactive Yellow Dye as contaminant in water", International Conference on Advances in Materials and Manufacturing Applications, Aug 17-19, 2017 (Scopus indexed- IConAMMA\_2017)
- Swarnalakshmi K S,Prakash Chinnaiyan, Nivetha S, Athira S Nair, Use of Rice husk ash as an adsorbent to remove contaminants in water and comparison with advanced oxidation process - a study, International Conference on Advances in Materials and Manufacturing Applications, Aug 17 -19, 2017 (Scopus indexed IConAMMA\_2017)

# Major Proposals submitted from the lab

- Project proposal submitted to DST-WTI-Mission mode, 2017 for the project titled "Improvement of ground water quality and ground water recharge through rejuvenation of Ganganarayansamudharam pond in Perur Chettipalayam, Coimbatore" for an amount of 69.24 lakhs
- Project proposal submitted to SYST 2017 (Scheme for Young Scientist, DST) for the project titled 'Development of portable water treatment unit for removal of critical pharmaceutical compounds in Indian water for an amount of Rs.20.82 lakhs
- Project proposal submitted under section 35 (Amrita University) for the project titled 'Treatment of emerging contaminants in water using advanced oxidation process for an amount of Rs.43.67 lakhs on 10.1.17
- Project proposal submitted to SYST 2015 (Scheme for Young Scientist, DST) for the project titled 'Treatment of pharmaceutical and personal care products using advanced oxidation processes' for an amount of Rs.14 lakhs

Apart from these research labs, regular labs are also used for research and project works of the students and selected project details are listed in Sections 6.4.4 through 6.4.6

# 6.4.4 Construction Materials Lab

# Table B.6.4.4 Details of the Project

| Ac.Yr | Batch           | Project Title  |
|-------|-----------------|--|
| 15-16 | 2012-2016       | Analysis of neutron shielding capacity of Boron carbide in     |
| 15 10 | 2012 2010       | concrete   |
|       |                 | Effect of Superplasticizer on the Setting time of PPC Concrete |
| 16-17 | 2013-2017       | A Study On Utilization Of Recycled Waste As Filler In Foam     |
|       |                 | Concrete   |
|       |                 | Strength and Durability Characteristics of Concrete made using |
|       |                 | Copper Slag and Mineral Admixtures                             |
|       |                 | Reactive Powder Concrete [RPC] – Optimum Mix Design,           |
| 17-18 | 17-18 2014-2018 | Workability And Mechanical Properties                          |
|       |                 | Study on performance of Hybrid fibre reinforced foam concrete  |
|       |                 | Study on Partial Replacement of M - Sand With Dolomite -       |
|       |                 | Silica Sand in Cement Mortar                                   |
|       |                 | Effective utilization of Dolomite Rock Sand in concrete as FA  |
| 10.10 | 2015-2019       | replacement – a study  |
| 18-19 |                 | High strength concrete using M sand – an experimental study    |
|       |                 | Abrasion resistance of concrete using sustainable material     |

# 6.4.5 Geotechnical Engineering Lab

### Table B.6.4.5 Details of the Project

| Ac.Yr           | batch   | Project Title  |  |
|-----------------|---|--|--|
| 15-16           | 2012-2016   | Physical & strength response study of recycled materials in pavement applications.   |  |
|                 |   | Performance Evaluation Of Areca Leaf Cells As Cellular<br>Confinement In Soil In Comparison To HDPE Geocells                 |  |
| 16-17 2013      | 2013-2017   | Estimation Of Seismic Bearing Capacity Of Shallow Strip<br>Footing Using Psuedo Dynamic Approach                             |  |
|                 |   | Prediction of Critical Phreatic Level for Slope Stability of<br>Different Types of soil using a Scaled Down Laboratory Model |  |
| 17-18 2014-2018 |   | Pseudo - dynamic analysis of soil nailed wall considering composite failure surface.   |  |
|                 | 2014-2018   | Investigation on different shaped shallow foundations for on shore wind turbines   |  |
|                 | Performance evaluation of coconut shell mat as cellular confinement in soils. Experimental and analytical studies |  |  |
| 18-19 2015-201  | 2015 2019   | Behaviour of square footing on sand reinforced with natural fibre geo cell   |  |
|                 | 2013-2019   | Comparative study of variation in geotechnical properties of soil remediated using biochar                                   |  |

# 6.4.6 Structural Engineering Lab

# Table B.6.4.6 Details of the Project

| Ac.Yr           | batch   | Project  |
|-----------------|---|--|
| 15.16 2012.2016 | Strength of reinforced concrete beam in flexure using Hybrid<br>Sisal -Jute CFRP Composite System       |  |
| 15-10           | 13-16 2012-2016   | Strengthening Steel Members with Holes Under Tension Using Unidirectional GFRP Sheets        |
|                 |   | Experimental studies on a vibrating beam under high flexural stresses                        |
| 16-17 2013-2017 | Mechanical Properties And Shear Strengthening Capacity Of<br>High Volume Fly Ash-Cementitious Composite |  |
|                 |   |  |
|                 |   | Effectiveness of material modification of shear walls in reduction of vibration transmission |
| 17-18           | 2014-2018   | Vibration isolation at the level of footing using modified concrete                          |
|                 |   | Study of corrosion resistance in reinforced concrete using natural core shell pigments.      |

| <b>CRITERION 7</b> | <b>Continuous Improvement</b> | 75 |  |
|--------------------|-------------------------------|----|--|

#### 7.1. Actions taken based on the results of evaluation of each of the COs, POs & PSOs

The evaluation of COs, POs & PSOs for each course is carried out for the 2010 curriculum (2014 Regulation). The actions taken for each POs and PSOs for the entire 2014 -18 batch is highlighted in the Table B 7.1 (a) & 7.1(b).

| Table B 7.1 (a) Attainment Levels and Action taken for improvement |
|--|
|--|

| POs         | Target<br>Level   | Attainment<br>Level | Observations   |  |  |  |
|-------------|---|---------------------|--|--|--|--|
| <b>PO1:</b> | Enginee   | ring knowle         | dge: Apply the knowledge of mathematics, science,  |  |  |  |
| enginee     | engineering fundamentals, and an engineering specialization to the solution of comple |                     |  |  |  |  |
| enginee     | ring prob   | olems.              |  |  |  |  |
| PO1         | 2.00  | 2.53                | Civil engineering curriculum needs sound knowledge of<br>physics and mathematics. Students should be able to<br>correlate the theoretical concepts from basic sciences with<br>Civil engineering applications.<br>Target level has been attained. The following actions are<br>considered/implemented to sustain/improve this<br>attainment level. |  |  |  |

Actions:

- 1. To understand the application of mathematics in the core domain, Department faculty are encouraged to handle the classes.
- 2. Seminars are conducted with experts from Civil engineering to boost the application oriented technical knowledge.
- 3. Industrial visits and internship to core industries to see and understand the industrial environment, as well as acquire the additional skills required for core industry jobs.
- 4. Students are encouraged to participate in technical events where they can apply both basic and engineering knowledge.

**PO2: Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences

| PO2 | 2.00 | 2.00 2.53 | The first- and second-year curriculum helps in shaping the |
|-----|------|-----------|--|
|     |      |           | problem solving and analysis skills required for major     |
|     |      |           | Civil engineering courses in the subsequent years. Limited |
|     |      |           | real time applications-oriented case example hampers the   |
|     |      |           | students understanding levels.                             |
|     |      |           | Target level has been attained. The following actions are  |
|     |      |           | considered/implemented to sustain/improve this             |
|     |      |           | attainment level   |
|     |      |           |  |

Actions:

- 1. Slow learners are identified and provided with additional assignments.
- 2. Additional classes are conducted beyond the regular planned classes.
- 3. Allowing students to visit industries and take internship to get practical exposure.

**PO3: Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations

|     |      |      | Most of the project works undertaken by the students      |
|-----|------|------|---|
|     |      |      | focus on engineering and technical aspects with emphasis  |
|     |      |      | on sustainability, social, cultural and environmental     |
| PO3 | 2.00 | 2.48 | concerns.   |
|     |      |      | Target level has been attained. The following actions are |
|     |      |      | considered/implemented to sustain/improve this            |
|     |      |      | attainment level  |
|     |      |      |   |

Actions:

 Students are encouraged to participate in various societal and environmental relevant activities organised such as Amala Bharatham (Clean India Drive & Awareness programme) and Amrita Quench (initiative for water conservation) and Live-in-Labs (experimental learning programme to solve the real-world problems using the engineering knowledge and skills).

- 2. Periodic programmes on social, cultural and environmental awareness.
- 3. Encouraging students to visit industries and take internship to get practical exposure.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

|      |      | Curriculum provides Scope for research-based learning       |
|------|------|---|
| 2.00 | 2.56 | through final year project. Most of the students are making |
|      |      | progress in conducting research-based investigations of     |
|      |      | complex problems and reaching conclusions through           |
|      |      | project.  |
|      |      | Target level has been attained. The following actions are   |
|      |      | considered/implemented to sustain/improve this              |
|      |      | attainment level  |
|      | 2.00 | 2.00 2.56   |

Actions:

- 1. Professional project has been introduced in 2015 curriculum for final year students to improve the design and analysis of complex infrastructure related problems through research-based study.
- 2. Project phase1 & 2 in the curriculum for final year students helps to improve the research ideology, analysis of complex problems in the civil engineering domain and provide the information of the research outcome.
- 3. Case studies in laboratory and theory courses are discussed and students are encouraged to do mini projects.
- 4. Students also encouraged to participate in Live-in-Labs projects of Amrita Vishwa Vidyapeetham, a multidisciplinary real-life problem-solving, field-oriented projects, facilitates research, development and deployment of solutions for challenges faced by the rural communities.

**PO5: Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

|     |      |      | Selected laboratory courses are conducted with the usage  |
|-----|------|------|---|
|     |      |      | of modern tools wherever possible.                        |
| PO5 | 2.00 | 2.60 | Target level has been attained. The following actions are |
|     |      |      | considered/implemented to sustain/improve this            |
|     |      |      | attainment level  |

Actions:

- 1. Students are encouraged to visit various construction sites and also to take up internships at design office to familiarise with the modern equipment / software tools.
- 2. Seminars and workshops are conducted to give hands on experience to various software/IT and modern equipment used in industry.
- 3. Faculty are encouraged to take up industrial consultancy to make use of the laboratory facilities as well as to provide the students to work on the real-world problems.
- 4. Upgrading the computational infrastructure is under process.
- 5. Case studies on subject areas are encouraged and allowed students to explore the same using relevant software tools.

**PO6: The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

| PO6 | 2.00 | 2.72 | Civil engineering profession is highly linked to societal |
|-----|------|------|---|
|     |      |      | well-being, health and safety, legal and cultural         |
|     |      |      | dimensions of built environment.                          |
|     |      |      | Target level has been attained. The following actions are |
|     |      |      | considered/implemented to sustain/improve this            |
|     |      |      | attainment level  |

Actions:

- 1. The students are exposed to various societal, health and safety, legal and cultural issues in built environment through seminars by experts.
- Students also encouraged to participate in Amala Bharatham, Amrita Quench and Live-in-Labs projects of Amrita Vishwa Vidhyapeetham.

**PO7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development

| 2.91 | The students should be aware of major environmental       |
|------|---|
|      | issues of infrastructure projects and come up with        |
|      | innovative solutions for sustainable development.         |
|      | Target level has been attained. The following actions are |
|      | considered/implemented to sustain/improve this            |
|      | attainment level  |
|      | 2.91  |

Actions:

- 1. Students are encouraged to take up projects focussing sustainability of built environment.
- 2. Courses related to environmental issues and sustainable practices are introduced in 2015 curriculum.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

| 2.00 | 2.88 | The electives of cultural education and humanities          |
|------|------|---|
|      |      | provide the insights about professional ethics, however, in |
|      |      | real life situations it need to be addressed.               |
|      |      | Target level has been attained. The following actions are   |
|      |      | considered/implemented to sustain/improve this              |
|      |      | attainment level.   |
|      | 2.00 | 2.00 2.88   |

Actions:

- 1. Talks on professional ethics from practising engineers and academicians are organised.
- 2. Motivational talks are organised to reflect the professional ethics and sense of honesty in students.

**PO9: Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings

| PO9 | 2.00 | 2.00 2.74 | Ability to work as a team and coordination among the      |
|-----|------|-----------|---|
|     |      |           | team members are found to be good. The students are       |
|     |      |           | capable of working on a project/idea as a team.           |
|     |      |           | Target level has been attained. The following actions are |
|     |      |           | considered/implemented to sustain/improve this            |
|     |      |           | attainment level.   |

Actions:

- 1. The students are encouraged to organise and lead various technical and cultural events of the institute to groom their leadership, team work, coordination, and commitment.
- 2. Corporate and Industry relations (CIR) department of Amrita Vishwa Vidhyapeetham organises classes/ workshops for the benefit of students to improve their above said soft skills.

**PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions

|      |      |      | Presentation, report writing and communication skills     |
|------|------|------|---|
|      |      |      | needs further improvement among some of the students.     |
| PO10 | 2.00 | 2.70 | Target level has been attained. The following actions are |
|      |      |      | considered/implemented to sustain/improve this            |
|      |      |      | attainment level  |
|      |      | 1    |   |

Actions:

- 1. Students are exposed to technical communication and various related electives during their course of study.
- 2. Part of internal assessment of selected courses is given as technical report writing and presentation as individual exercise.
- Corporate and Industry relations (CIR) department of Amrita Vishwa Vidhyapeetham organises workshops and also offers courses for the benefit of students to improve their above said soft skills.
**PO11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

|      | 2.00 | 2.81 | Course on principles of management is offered. Still, more |
|------|------|------|--|
| DO11 |      |      | relevant courses can be identified to improve the          |
|      |      |      | managerial skills to the students.                         |
| POIT |      |      | Target level has been attained. The following actions are  |
|      |      |      | considered/implemented to sustain/improve this             |
|      |      |      | attainment level   |

Actions:

- 1. Project management including economics and organisational processes are exposed to the students through core and electives courses in 2015 curriculum.
- 2. The students are encouraged to organise and lead various technical and cultural events to improve the managerial skills.

**PO12: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change

|      |      |      | Final year courses emphasises the attitude for lifelong |  |  |  |
|------|------|------|---|--|--|--|
|      |      |      | learning to learn about contemporary developments.      |  |  |  |
| PO12 | 2.00 | 2.61 | Target level has been attained. The following actions a |  |  |  |
|      |      |      | considered/implemented to sustain/improve this          |  |  |  |
|      |      |      | attainment level  |  |  |  |

Actions:

- 1. Students are exposed to various online learning platforms to learn core and specialised subjects.
- 2. Teachers are advised to highlight the need for lifelong learning to the students.
- 3. Faculty and Amrita centre for entrepreneurship also engages with students and alumni in turning innovative ideas to start-up, and mentorship to create the entrepreneurship culture.

| Table B 7.1 (b) PSOs Attainment Levels and Action taken for improvem |
|--|
|--|

| PSOs  | Target<br>Level | Attainment<br>Level | Observations  |  |  |
|---|-----------------|---------------------|---|--|--|
| <b>PSO1:</b> Apply the acquired knowledge in mathematics and basic science to analyze and solve problems in situation involving structural, geotechnical, transportation and environmental engineering. |                 |                     |   |  |  |
| PSO1  | 2.00            | 2.67                | The curriculum provides fundamental engineering<br>concepts and technical knowledge with practical<br>applications in diverse Civil engineering field.<br>Target level has been attained. The following<br>actions are considered/implemented to<br>sustain/improve this attainment level |  |  |

Actions:

- 1. As Civil engineers rely on complex and sophisticated software to develop designs, and manage projects, workshops were conducted to enhance the students technical proficiency to meet industry standards.
- 2. Civil engineering profession needs creative real-world-problem-solving skills by generating multiple solutions for major projects. Opportunities are provided to students to showcase their creative ideas to solve the pressing societal issues.
- 3. Allowing students to visit industries and take internship to get practical exposure.

PSO2: Provide design details with specifications and estimates for systems like buildings and hydraulic structures.

|              |      |      | Professional design practice with IS codes are      |
|--------------|------|------|---|
| <b>D</b> 200 | 2.00 | 2.68 | introduced for better career prospects. The         |
|              |      |      | curriculum provides the knowledge needed to         |
|              |      |      | manage all aspects of Infrastructure projects, from |
| PS02         |      |      | design to implementation.                           |
|              |      |      | Target level has been attained. The following       |
|              |      |      | actions are considered/implemented to               |
|              |      |      | sustain/improve this attainment level               |
| Actions:     | 1    | 1    | 1   |

- 1. Workshops were conducted with experts from industry on codal practices in Civil engineering.
- 2. Encouraging students for industrial visits/internships to get practical exposure.

**PSO3:** Apply concepts of Construction engineering, management and sustainability in project environment.

|      |      | Curriculum provides overview about the wide   |
|------|------|---|
|      |      | range of tasks and components involved in     |
|      |      | complex construction engineering and          |
| 2.00 | 2.74 | management.                                   |
|      |      | Target level has been attained. The following |
|      |      | actions are considered/implemented to         |
|      |      | sustain/improve this attainment level         |
|      | 2.00 | 2.00 2.74                                     |

Actions:

- 1. Workshops are conducted with experts about information technology and financial management techniques to manage the construction projects as per the planned schedule and budget.
- 2. Professional projects has been included in 2015 curriculum, with the aim to understand multiple job responsibilities in project environment and prioritising the tasks.
- 3. Invited talks are organised with experts about energy conservation and minimising environmental impacts of Civil engineering projects.

\*As the target is attained in all POs ans PSOs, as a part of continuous improvement,it is planned to increase the threshold value in subsequent curriculam revision

#### 7.2. Academic Audit and action taken thereof during the period of assessment

The structure of the academic audit system is schematically as shown in the Fig B 7.2, It functions at class level to review the teaching-learning process, assess the issues and offer the best possible solutions to enhance the teaching-learning process.



Fig B 7.2 Flow chart on Teaching –Learning Process

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The class committee (CC) is the central unit, a joint faculty and student representatives' committee with formal feed-back system headed by the chairperson/senior faculty of the department and managed by class advisors. The committee meets thrice in a semester (CCM1, CCM2 and CCM3) to assess: (i) syllabus covered; (ii) students' performance; (iii) teaching; (iv) attendance; and (v) any academic related grievances from faculty and students (Audit 1). The minutes of the CCM will be shared with faculty and students.

Chairperson with the support of department academic coordinator audits the question paper quality along with CO coverage (Audit 3), work register (Audit 2) and attainment levels (Audit 4) of course outcome (COA) and programme outcome (POA).

#### 7.3. Improvement in Placement, Higher Studies and Entrepreneurship

 Table B 7.3 Data's on Placement, Higher studies and Entrepreneurships for the Past

 Three Years

| Year    | Total<br>Student | No: of Students<br>Graduated | Placement | Higher<br>Studies | Entrepreneur |
|---------|------------------|------------------------------|-----------|-------------------|--------------|
| 2017-18 | 55               | 49                           | 16        | 12                | 1            |
| 2016-17 | 67               | 64                           | 29        | 24                | 1            |
| 2015-16 | 53               | 52                           | 18        | 24                | 5            |

## 7.4. Improvement in the Quality of Students admitted to the program

**Table B 7.4** Data's on Quality of students admitted for the Past Three Years in the Civil Engineering Stream.

| Item                     | 2018 - 2019     | 2017 - 2018 | 2016 - 2017 |       |  |  |
|--------------------------|-----------------|-------------|-------------|-------|--|--|
| National Level Entrance  | No. of Students |             |             |       |  |  |
| Examination (Name of     | Admitted        |             |             |       |  |  |
| the Entrance             | Opening Rank /  |             | NI A **     |       |  |  |
| Examination)             | Score           |             |             |       |  |  |
|                          | Closing Rank /  |             |             |       |  |  |
|                          | Score           |             |             |       |  |  |
| Institute level entrance | No. of Students | 50          | 50          | 65    |  |  |
| Examination              | Admitted        | 39          | 39          | 03    |  |  |
|                          | Opening Rank /  | 820         | 1000        | 1710  |  |  |
| (Amrita Entrance Exam    | Score           | 020         | 1000        | 1/19  |  |  |
| for Engineering) *       | Closing Rank /  | 25024       | 26747       | 29540 |  |  |
|                          | Score           | 25054       | 20/4/       | 20540 |  |  |
| Name of the Entrance     | No. of Students |             |             |       |  |  |
| Examination for Lateral  | Admitted        |             |             |       |  |  |
| Entry or                 | Opening Rank /  |             |             |       |  |  |
| lateral entry details    | Score           |             | NA          |       |  |  |
|                          | Closing Rank /  | -           |             |       |  |  |
|                          | Score           |             |             |       |  |  |
| Average CBSE/ Any        | Maths           | 81.93       | 82.92       | 85.19 |  |  |
| other Board Results of   | Physics         | 85.03       | 87.81       | 85.16 |  |  |
| admitted students        |                 |             |             |       |  |  |
| (Physics, Chemistry &    | Chemistry       | 81.59       | 84.23       | 87.48 |  |  |
| Mathematics)             |                 |             |             |       |  |  |

\*Counselling for the admission is based on the overall ranking in AEEE.

\*\* Not Applicable

|                    | First Year Academics | 50 |
|--------------------|----------------------|----|
| <b>CRITERION 8</b> | First Fear Academics | 50 |

#### 8.1. First Year Student-Faculty Ratio (FYSFR)

| <b>Table B.8.1</b> Data for first year courses to calculate the FYSFR: |
|--|
|  |

| Year    | Number of<br>students<br>(approved<br>intake<br>strength) | Number of faculty<br>members<br>(considering<br>fractional load) | FYSFR | *Assessment = (5<br>×20)/<br>FYSFR (Limited to<br>Max. 5) |
|---------|---|--|-------|---|
|         |   |  |       |   |
| CAY     | 1380  | 79   | 17.47 | 5   |
| CAYm1   | 1242  | 74   | 16.78 | 5   |
| CAYm2   | 1020  | 65   | 15.69 | 5   |
| Average | 1214  | 72.67  | 16.65 | 5   |

#### 8.2. Qualification of Faculty Teaching First Year Common Courses (5)

Assessment of qualification = (5x + 3y)/RF, x= Number of Regular Faculty with Ph.D., y = Number of Regular Faculty with Post-graduate qualification RF= Number of faculty members required as per SFR of 20:1, Faculty definition as defined in 5.1

| Year    | X     | Y     | RF    | Assessment of<br>faculty<br>qualification<br>(5x + 3y)/RF |
|---------|-------|-------|-------|---|
| САҮ     | 63    | 16    | 69    | 5.26  |
| CAYm1   | 56    | 18    | 62.1  | 5.38  |
| CAYm2   | 46    | 19    | 51    | 5.63  |
| AVERAGE | 55.00 | 17.67 | 60.70 | 5.42  |

**Table B.8.2** Data for assessing faculty qualification

### 8.3. First Year Academic Performance

 Table B.8.3 (a) First year academic performance of the students for the year 2017-2018

| Department                                     | Number of<br>Students<br>Appeared in<br>The Exam | Number of<br>Successful<br>Students | Total Grade<br>Point of All<br>Successful<br>Students<br>Total | Total Grade Point<br>Average of All Successful<br>Students<br>Total |  |
|--|--|-------------------------------------|--|---|--|
| Aerospace Engineering                          | 60   | 60                                  | 890.83   | 7.42  |  |
| Chemical Engineering                           | 57   | 57                                  | 751.29   | 6.59  |  |
| Civil Engineering                              | 59   | 59                                  | 792.29   | 6.71  |  |
| Computer Science and Engineering               | 397  | 397                                 | 5947.98  | 7.49  |  |
| Electronics and Communication<br>Engineering   | 264  | 264                                 | 3938.94  | 7.46  |  |
| Electrical and Electronics Engineering         | 108  | 108                                 | 1563.33  | 7.24  |  |
| Electronics and Instrumentation<br>Engineering | 50   | 50                                  | 695.20   | 6.95  |  |
| Mechanical Engineering                         | 244  | 244                                 | 3609.64  | 7.40  |  |
| Total  | 1239   | 1239                                | 18189.50   | 7.34  |  |

| Department                                     | Number of<br>Students<br>Appeared in the<br>Exam | Number of<br>Successful<br>Students | Total Grade<br>Point of All<br>Successful<br>Students<br>Total | Total Grade Point<br>Average of All Successful<br>Students<br>Total |
|--|--|-------------------------------------|--|---|
| Aerospace Engineering                          | 56   | 56                                  | 882.75   | 7.88  |
| Chemical Engineering                           | 43   | 43                                  | 654.5  | 7.61  |
| Civil Engineering                              | 65   | 65                                  | 944.17   | 7.26  |
| Computer Science and Engineering               | 377  | 377                                 | 5927.31  | 7.86  |
| Electronics and Communication<br>Engineering   | 197  | 197                                 | 3021.95  | 7.67  |
| Electrical and Electronics Engineering         | 123  | 123                                 | 1847.38  | 7.51  |
| Electronics and Instrumentation<br>Engineering | 51   | 51                                  | 754.32   | 7.40  |
| Mechanical Engineering                         | 191  | 191                                 | 2984.49  | 7.81  |
| Total  | 1103   | 1103                                | 17016.87   | 7.71  |

**Table B.8.3 (b)**First year academic performance of the students for the year 2016-2017

| Table B.8.3(c) First year academic performance of the stude | ents for the year 2015-2016 |
|---|-----------------------------|
|---|-----------------------------|

| Department                                     | Number of<br>Students<br>Appeared in the<br>Exam | Number of<br>Successful<br>Students | Total Grade<br>Point of All<br>Successful<br>Students<br>Total | Total Grade Point<br>Average of All Successful<br>Students<br>Total |  |  |
|--|--|-------------------------------------|--|---|--|--|
| Aerospace Engineering                          | 48   | 48                                  | 731.00   | 7.61  |  |  |
| Chemical Engineering                           | 60   | 60                                  | 916.49   | 7.64  |  |  |
| Civil Engineering                              | 63   | 63                                  | 941.98   | 7.48  |  |  |
| Computer Science and Engineering               | 285  | 285 285 4282.30                     |  | 7.51  |  |  |
| Electronics and Communication<br>Engineering   | 182  | 182                                 | 2609.57  | 7.17  |  |  |
| Electrical and Electronics Engineering         | 108  | 108                                 | 1601.42  | 7.41  |  |  |
| Electronics and Instrumentation<br>Engineering | 64   | 64                                  | 939.85   | 7.34  |  |  |
| Mechanical Engineering                         | 185  | 185                                 | 2782.04  | 7.52  |  |  |
| Total  | 995  | 995                                 | 14804.65   | 7.44  |  |  |

#### 8.4. Attainment of Course Outcomes of first year courses

# **8.4.1**(a) Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done

The CO attainment is computed at Amrita School of Engineering, Coimbatore using the **Inpods Software**. The following procedure is followed to do the computation.

| Step 1: | Faculty sets the assessment question paper with CO mapping, BTL mapping      |
|---------|--|
|         | and Marks of each question.  |
| Step 2: | Faculty enters the step 1 data in Inpods software and the bundle number is   |
|         | generated.   |
|         | Bundle Number is the unique number(Spread sheet) for a exam for a            |
|         | particular course for a particular class.                                    |
| Step 3: | The answer paper is evaluated by the faculty and is shared with the students |
|         | for verification.  |
| Step 4: | The front sheet of the answer paper which contains the question wise mark    |
|         | is torn and collected back by the faculty.                                   |
| Step 5: | Faculty sends those front sheet along with bundle number generated in step   |
|         | 2 to the data entry team   |
| Step 6: | Data entry team enters the marks of each students, question wise, in the     |
|         | Inpods software with the help of bundle number(spread sheet).                |
| Step 7: | The entry will be done by the faculty for assignment and quiz in inpods.     |
| Step 8: | Step 1 to Step 6 will be followed for Periodicals 1, Periodicals 2 and End   |
|         | Semester.  |
| Step 9: | The Course Attainment-Direct is computed by the Inpods software.             |

The process followed at Amrita School of Engineering, Coimbatore for CO computation in a theory course is given in Fig. B. 8.4.1(a) & (b). In the CO attainment calculation for a course, 80% is contributed through direct and 20% through Indirect. As per the university regulation, 50% of the direct is contributed by Cumulative Internal Examination (CIE) and 50% from Semester End Examinations (SEE) for theory courses. In the CIE, Periodical 1, Periodical 2 and Continuous Assessment contributes 15, 15 and 20 respectively. For Lab courses, 80% and 20% is contributed by continuous assessment and end semester examinations respectively to the direct attainment.



Fig.B. 8.4.1 (a) CO attainment for theory courses





Fig.B. 8.4.1 (b) CO attainment for theory courses

## **8.4.1(b)** Describe the assessment tools and processes used for measuring the attainment of each Program Outcomes and Program Specific Outcomes

The PO/PSO attainment is computed through direct and indirect. The direct part is computed through the attainment of COs from all courses, using the Course Articulation Matrix (CAM). The indirect attainments of the POs are computed through survey among stakeholders as shown in Fig.B. 8.4.1(c)



Fig.B. 8.4.1(c) PO/PSO attainment

| <b>PO/PSO Attainment is C</b> | Computed based o | on the following expressions |
|-------------------------------|------------------|------------------------------|
|-------------------------------|------------------|------------------------------|

| Direct   | Attainment of PO/PSO through a Course:   |  |  |  |  |  |  |  |  |  |
|----------|--|--|--|--|--|--|--|--|--|--|
|          | $PO_{ij} Attainment = \frac{\sum_{k=1}^{COmax} CA_k * CAM_{ik}}{\sum_{k=1}^{COmax} CAM_{ik}}$  |  |  |  |  |  |  |  |  |  |
|          | Where, PO <sub>ij</sub> is the Attainment of 'i' th PO through the course 'j'<br>COmax is the maximum number of COs in the course 'j'<br>CA is Course Attainment |  |  |  |  |  |  |  |  |  |
|          | CAM <sub>ik</sub> is the Course Articulation matrix for the 'i' th PO for the course 'j' with 'k' COs  |  |  |  |  |  |  |  |  |  |
|          | Attainment of PO/PSO through all courses   |  |  |  |  |  |  |  |  |  |
|          | Poi Attainment = Average across all Courses Addressing that POs/PSOs   |  |  |  |  |  |  |  |  |  |
| Indirect | Based on Survey  |  |  |  |  |  |  |  |  |  |
|          | $PO_{i} = \frac{\sum_{i=1}^{5} i * no. of students gave ioption}{5 * no. of responses}$  |  |  |  |  |  |  |  |  |  |
|          | Where, PO <sub>i</sub> is the attainment of the 'i'th PO   |  |  |  |  |  |  |  |  |  |

| Course |   |     |     |     |     |     |     |
|--------|---|-----|-----|-----|-----|-----|-----|
| Course | Course Title  | CO1 | CO2 | CO3 | CO4 | CO5 | CO6 |
| CSE100 | Computer Programming                                | 2.6 | 2.6 | 2.6 | 2.6 |     |     |
| CSE180 | Computer Programming Lab                            | 2.0 | 2.0 | 2.0 | 2.0 |     |     |
| CUL101 | Cultural Education -1                               | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |     |
| CUL102 | Cultural Education-2                                | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |     |
| ECE100 | Electronics Engineering                             | 2.5 | 2.5 | 2.5 | 2.5 |     |     |
| EEE100 | Electrical Engineering                              | 1.5 | 2.0 | 2.0 | 2.0 | 2.0 |     |
| EEE180 | Workshop B  | 1.2 | 1.2 | 1.2 | 1.2 |     |     |
| ENG111 | Communicative English                               | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |     |
| ENG112 | Technical Communication                             | 3.0 | 3.0 | 3.0 | 3.0 | 3.0 |     |
| MAT111 | Calculus, Matrix Algebra                            | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| MAT112 | Vector Calculus and Ordinary Differential Equations | 2.2 | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |
| MEC181 | Engineering Drawing                                 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 | 2.5 |
| MEC182 | CAD   | 2.5 | 2.5 | 2.5 | 2.5 |     |     |
| MEC100 | Engineering Mechanics                               | 2.2 | 1.8 | 1.8 | 2.2 | 2.3 |     |
| MEC180 | Workshop A  | 2.0 | 2.0 | 2.0 | 2.0 |     |     |
| CHY100 | Chemistry   | 1.8 | 2.2 | 2.2 |     |     |     |

**Table B.8.4.2(a)**CO-Attainment Level-2014-2015 (2010 Onwards)

**8.4.2.** Record the attainment of Course Outcomes of all first year courses

| CHY181 | Chemistry Lab. | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 |  |
|--------|----------------|-----|-----|-----|-----|-----|--|
| PHY100 | Physics        | 2.6 | 2.6 | 2.6 |     |     |  |
| PHY181 | Physics Lab    | 3.0 | 3.0 | 3.0 |     |     |  |

| Course<br>Code | Course Title  | CO1   | CO2   | CO3   | CO4   | CO5   | <b>CO6</b> |
|----------------|---|-------|-------|-------|-------|-------|------------|
| CSE180         | Computer Programming Lab                            | 54.44 | 55.41 | 55.20 | 54.44 |       |            |
| CUL101         | Cultural Education -1                               | 68.26 | 72.09 | 70.00 | 72.74 | 72.98 |            |
| CUL102         | Cultural Education-2                                | 85.68 | 89.15 | 89.75 | 89.99 | 89.85 |            |
| ECE100         | Electronics Engineering                             | 60.68 | 62.36 | 66.09 | 70.66 |       |            |
| EEE100         | Electrical Engineering                              | 39.26 | 47.71 | 57.91 | 63.04 | 63.04 |            |
| EEE180         | Workshop B  | 23.35 | 23.35 | 23.35 | 23.35 |       |            |
| ENG111         | Communicative English                               | 67.72 | 78.88 | 72.67 | 66.30 | 66.74 |            |
| ENG112         | Technical Communication                             | 83.62 | 87.80 | 87.41 | 80.51 | 80.74 |            |
| MAT111         | Calculus, Matrix Algebra                            | 53.20 | 56.38 | 57.95 | 61.18 | 65.99 | 65.99      |
| MAT112         | Vector Calculus and Ordinary Differential Equations | 58.57 | 69.67 | 61.42 | 60.16 | 63.82 | 66.58      |
| MEC181         | Engineering Drawing                                 | 63.10 | 63.10 | 63.10 | 63.10 | 63.10 | 63.10      |
| MEC182         | CAD   | 60.47 | 60.47 | 60.47 | 60.47 |       |            |
| MEC100         | Engineering Mechanics                               | 54.22 | 51.42 | 50.98 | 70.14 | 70.14 |            |
| MEC180         | Workshop A  | 60.79 | 60.79 | 60.79 | 60.79 |       |            |
| CHY100         | Chemistry   | 47.55 | 55.32 | 54.96 |       |       |            |

Table B.8.4.2(b)CO-Attainment Percentage -2014-2015 (2010 Onwards)

| CHY181 | Chemistry Lab. | 62.98 | 63.57 | 63.57 | 64.16 | 64.16 |  |
|--------|----------------|-------|-------|-------|-------|-------|--|
| PHY100 | Physics        | 60.18 | 57.23 | 61.56 |       |       |  |
| PHY181 | Physics Lab    | 86.45 | 86.45 | 86.45 |       |       |  |

Sample Calculations of CO-Attainment

|        |     | InternalEnd SemesterExaminationExamination |       |            |       | Final Course<br>Attainment   |       | Target     | Attainment |   |       |       |        |
|--------|-----|--|-------|------------|-------|------------------------------|-------|------------|------------|---|-------|-------|--------|
| Course | COs | (CIE)                                      |       | (SEE)      |       | 50% of CIE and<br>50% of SEE |       | Indirect   |            | 80% of Direct<br>and 20% of<br>Indirect |       | (%)   | Yes/No |
|        |     | Attainment                                 | Level | Attainment | Level | Attainment*                  | Level | Attainment | Level      | Attainment                              | Level |       |        |
|        | CO1 | 64.16                                      | 3     | 57.62      | 2     | 60.89                        | 2.50  | 68.11      | 3          | 62.33                                   | 2.60  | 50.00 | YES    |
|        | CO2 | 71.19                                      | 3     | 57.62      | 2     | 64.41                        | 2.50  | 72.91      | 3          | 66.11                                   | 2.60  | 50.00 | YES    |
| CSE100 | CO3 | 68.71                                      | 3     | 57.62      | 2     | 63.17                        | 2.50  | 71.84      | 3          | 64.90                                   | 2.60  | 50.00 | YES    |
| CSEI00 | CO4 | 73.86                                      | 3     | 57.62      | 2     | 65.74                        | 2.50  | 68.11      | 3          | 66.22                                   | 2.60  | 50.00 | YES    |
|        | CO5 |  |       |            |       |                              |       |            |            |   |       |       |        |
|        | CO6 |  |       |            |       |                              |       |            |            |   |       |       |        |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Co<br>Attainm             | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                      | Level               |        |            |
| (      | CO1 | 54.36              | 2          | 52.18                | 2            | 53.27                 | 2.00        | 59.15      | 2     | 54.44                           | 2.00                | 50.00  | YES        |
|        | CO2 | 54.36              | 2          | 52.18                | 2            | 53.27                 | 2.00        | 64.00      | 3     | 55.41                           | 2.20                | 50.00  | YES        |
| CSE180 | CO3 | 54.36              | 2          | 52.18                | 2            | 53.27                 | 2.00        | 62.92      | 3     | 55.20                           | 2.20                | 50.00  | YES        |
| CSE180 | CO4 | 54.36              | 2          | 52.18                | 2            | 53.27                 | 2.00        | 59.15      | 2     | 54.44                           | 2.00                | 50.00  | YES        |
|        | CO5 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |
|        | CO6 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ester<br>tion | Direct                 |             |            |       | Final Con<br>Attainm          | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|---------------|------------------------|-------------|------------|-------|-------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |               | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indire | irect<br>6 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level         | Attainment*            | Level       | Attainment | Level | Attainment                    | Level               |        |            |
|        | CO1 | 88.49              | 3          | 80.15                | 3             | 84.32                  | 3.00        | 80.78      | 3     | 83.62                         | 3.00                | 50.00  | YES        |
|        | CO2 | 96.93              | 3          | 82.17                | 3             | 89.55                  | 3.00        | 80.78      | 3     | 87.80                         | 3.00                | 50.00  | YES        |
| ENG112 | CO3 | 97.99              | 3          | 80.15                | 3             | 89.07                  | 3.00        | 80.78      | 3     | 87.41                         | 3.00                | 50.00  | YES        |
| ENG112 | CO4 | 80.73              | 3          | 80.15                | 3             | 80.44                  | 3.00        | 80.78      | 3     | 80.51                         | 3.00                | 50.00  | YES        |
|        | CO5 | 81.30              | 3          | 80.15                | 3             | 80.73                  | 3.00        | 80.78      | 3     | 80.74                         | 3.00                | 50.00  | YES        |
|        | CO6 |                    |            |                      |               |                        |             |            |       |                               |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                 | -           |            |       | Final Co<br>Attainm             | ırse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|------------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*            | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|        | CO1 | 59.15              | 2          | 47.15                | 2            | 53.15                  | 2.00        | 80.27      | 3     | 58.57                           | 2.20                | 50.00  | YES        |
|        | CO2 | 86.89              | 3          | 47.15                | 2            | 67.02                  | 2.50        | 80.27      | 3     | 69.67                           | 2.60                | 50.00  | YES        |
| MAT112 | CO3 | 66.26              | 3          | 47.15                | 2            | 56.71                  | 2.50        | 80.27      | 3     | 61.42                           | 2.60                | 50.00  | YES        |
| MAT112 | CO4 | 63.11              | 3          | 47.15                | 2            | 55.13                  | 2.50        | 80.27      | 3     | 60.16                           | 2.60                | 50.00  | YES        |
|        | CO5 | 72.26              | 3          | 47.15                | 2            | 59.71                  | 2.50        | 80.27      | 3     | 63.82                           | 2.60                | 50.00  | YES        |
|        | CO6 | 79.17              | 3          | 47.15                | 2            | 63.16                  | 2.50        | 80.27      | 3     | 66.58                           | 2.60                | 50.00  | YES        |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                 |             |            |       | Final Con<br>Attainm          | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|------------------------|-------------|------------|-------|-------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indire | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*            | Level       | Attainment | Level | Attainment                    | Level               |        |            |
|        | CO1 | 53.25              | 2          | 31.53                | 1            | 42.39                  | 1.50        | 68.20      | 3     | 47.55                         | 1.80                | 50.00  | NO         |
|        | CO2 | 72.67              | 3          | 31.53                | 1            | 52.10                  | 2.00        | 68.20      | 3     | 55.32                         | 2.20                | 50.00  | YES        |
| CHY100 | CO3 | 71.79              | 3          | 31.53                | 1            | 51.66                  | 2.00        | 68.20      | 3     | 54.96                         | 2.20                | 50.00  | YES        |
| CHYIOU | CO4 |                    |            |                      |              |                        |             |            |       |                               |                     |        |            |
|        | CO5 |                    |            |                      |              |                        |             |            |       |                               |                     |        |            |
|        | CO6 |                    |            |                      |              |                        |             |            |       |                               |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Co<br>Attainm             | ırse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|        | CO1 | 68.15              | 3          | 51.23                | 2            | 59.69                 | 2.50        | 76.13      | 3     | 62.98                           | 2.60                | 50.00  | YES        |
|        | CO2 | 69.62              | 3          | 51.23                | 2            | 60.43                 | 2.50        | 76.13      | 3     | 63.57                           | 2.60                | 50.00  | YES        |
| CHY181 | CO3 | 69.62              | 3          | 51.23                | 2            | 60.43                 | 2.50        | 76.13      | 3     | 63.57                           | 2.60                | 50.00  | YES        |
| CHY181 | CO4 | 71.09              | 3          | 51.23                | 2            | 61.16                 | 2.50        | 76.13      | 3     | 64.16                           | 2.60                | 50.00  | YES        |
|        | CO5 | 71.09              | 3          | 51.23                | 2            | 61.16                 | 2.50        | 76.13      | 3     | 64.16                           | 2.60                | 50.00  | YES        |
|        | CO6 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Co<br>Attainm             | ırse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|        | CO1 | 73.20              | 3          | 40.10                | 2            | 56.65                 | 2.50        | 74.32      | 3     | 60.18                           | 2.60                | 50.00  | YES        |
|        | CO2 | 65.81              | 3          | 40.10                | 2            | 52.96                 | 2.50        | 74.32      | 3     | 57.23                           | 2.60                | 50.00  | YES        |
| PHY100 | CO3 | 76.65              | 3          | 40.10                | 2            | 58.37                 | 2.50        | 74.32      | 3     | 61.56                           | 2.60                | 50.00  | YES        |
| PHY100 | CO4 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |
|        | CO5 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |
|        | CO6 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                 |             |            |       | Final Co<br>Attainm            | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|------------------------|-------------|------------|-------|--------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indired | irect<br>6 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*            | Level       | Attainment | Level | Attainment                     | Level               |        |            |
| (      | CO1 | 99.02              | 3          | 79.08                | 3            | 89.05                  | 3.00        | 76.04      | 3     | 86.45                          | 3.00                | 50.00  | YES        |
|        | CO2 | 99.02              | 3          | 79.08                | 3            | 89.05                  | 3.00        | 76.04      | 3     | 86.45                          | 3.00                | 50.00  | YES        |
| PHY181 | CO3 | 99.02              | 3          | 79.08                | 3            | 89.05                  | 3.00        | 76.04      | 3     | 86.45                          | 3.00                | 50.00  | YES        |
| PHYI81 | CO4 |                    |            |                      |              |                        |             |            |       |                                |                     |        |            |
|        | CO5 |                    |            |                      |              |                        |             |            |       |                                |                     |        |            |
|        | CO6 |                    |            |                      |              |                        |             |            |       |                                |                     |        |            |

| Course<br>Code | Course Title  | CO1  | CO2  | CO3  | CO4  | CO5  | CO6  | CO7  | CO8  |
|----------------|---|------|------|------|------|------|------|------|------|
| 15AES111       | Introduction to Aerospace Technology                      | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |      |
| 15CHE111       | Introduction to Chemical Engineering                      | 2.20 | 3.00 | 3.00 | 2.20 | 3.00 | 3.00 | 3.00 | 3.00 |
| 15CHE112       | Material Balances   | 3.00 | 2.20 | 2.20 | 2.20 |      |      |      |      |
| 15CVL102       | Mechanics: Statics and Dynamics                           | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |      |      |
| 15CVL111       | Introduction to Civil Engineering                         | 2.00 | 2.20 | 2.20 |      |      |      |      |      |
| 15CVL112       | Engineering Graphics-CAD                                  | 2.36 | 2.36 | 2.36 | 2.36 | 2.36 |      |      |      |
| 15CSE100       | Computational Thinking and Problem<br>Solving             | 3.00 | 3.00 | 3.00 | 3.00 |      |      |      |      |
| 15CSE102       | Computer Programming                                      | 2.20 | 2.20 | 2.20 | 2.20 |      |      |      |      |
| 15CSE111       | Computer Science Essentials                               | 2.40 | 2.60 | 2.60 | 2.40 | 2.20 | 2.40 |      |      |
| 15CSE180       | Computer Programming Lab                                  | 2.00 | 2.20 | 2.20 | 2.00 |      |      |      |      |
| 15CUL101       | Cultural Education -1                                     | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |      |      |
| 15CUL111       | Cultural Education-2                                      | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |      |      |
| 15ECE111       | Solid State Devices                                       | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |      |      |      |
| 15ECE112       | Fundamentals of Electrical Technology                     | 2.00 | 1.50 | 2.00 | 2.00 | 2.00 | 2.00 |      |      |
| 15EEE111       | Fundamentals of Electrical and Electronics<br>Engineering | 2.20 | 2.60 | 220  | 2.60 | 2.60 | 2.60 |      |      |
| 15EEE180       | Workshop B  | 2.20 | 2.20 | 2.20 | 2.20 |      |      |      |      |
| 15ENG111       | Communicative English I                                   | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |      |      |
| 15MAT111       | Calculus, Matrix Algebra                                  | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |      |

Table B.8.4.2(c) CO-Attainment Level 2015-2016 (For 2015 onwards)

| 15MAT121 | Vector Calculus and Ordinary Differential<br>Equations | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |  |
|----------|--|------|------|------|------|------|------|--|
| 15MEC100 | Engineering Drawing -CAD                               | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 3.00 |  |
| 15MEC101 | Engineering Drawing-CAD-II                             | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MEC102 | Engineering Mechanics                                  | 2.60 | 2.60 | 2.47 | 2.60 | 2.60 |      |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                 | 1.80 | 1.80 | 2.20 | 2.20 | 2.20 |      |  |
| 15MEC180 | Workshop A   | 2.20 | 2.20 | 2.20 | 2.20 |      |      |  |
| 15CHY100 | Chemistry  | 2.60 | 2.60 | 2.60 |      |      |      |  |
| 15CHY181 | Chemistry Lab.   | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |  |
| 15PHY100 | Physics  | 2.60 | 2.60 | 2.60 |      |      |      |  |
| 15PHY181 | Physics Lab  | 3.00 | 3.00 | 3.00 |      |      |      |  |

 Table B.8.4.2(d) CO-Attainment Percentage 2015-2016 (For 2015 onwards)

| Course<br>Title | Course                                     | CO1   | CO2   | CO3   | CO4   | CO5   | CO6   | CO7   | CO8   |
|-----------------|--|-------|-------|-------|-------|-------|-------|-------|-------|
| 15CHE111        | Introduction to Chemical Engineering       | 64.31 | 69.67 | 73.67 | 61.67 | 67.03 | 77.67 | 81.67 | 67.03 |
| 15CHE112        | Material Balances                          | 66.56 | 58.56 | 55.84 | 62.56 |       |       |       |       |
| 15CVL102        | Mechanics: Statics and Dynamics            | 65.37 | 67.09 | 76.71 | 72.09 | 67.79 |       |       |       |
| 15CVL111        | Introduction to Civil Engineering          | 41.00 | 50.30 | 52.40 |       |       |       |       |       |
| 15CVL112        | Engineering Graphics-CAD                   | 63.75 | 65.30 | 65.84 | 66.24 | 67.18 |       |       |       |
| 15CSE100        | Computational Thinking and Problem Solving | 86.26 | 85.15 | 86.35 | 86.01 |       |       |       |       |
| 15CSE102        | Computer Programming                       | 64.52 | 57.15 | 61.65 | 59.68 |       |       |       |       |

| 15CSE111 | Computer Science Essentials                               | 64.83 | 71.86 | 67.30 | 72.74 | 66.33 | 70.74 |  |
|----------|---|-------|-------|-------|-------|-------|-------|--|
| 15CSE180 | Computer Programming Lab                                  | 48.55 | 50.35 | 49.95 | 48.55 |       |       |  |
| 15CUL101 | Cultural Education -1                                     | 72.24 | 74.07 | 72.73 | 73.14 | 71.76 |       |  |
| 15CUL111 | Cultural Education-2                                      | 83.07 | 83.86 | 81.95 | 83.66 | 85.15 |       |  |
| 15ECE111 | Solid State Devices                                       | 50.76 | 53.26 | 56.52 | 65.29 | 65.29 |       |  |
| 15ECE112 | Fundamentals of Electrical Technology                     | 42.29 | 42.91 | 50.20 | 50.20 | 64.26 | 64.26 |  |
| 15EEE111 | Fundamentals of Electrical and Electronics<br>Engineering | 59.97 | 61.74 | 60.89 | 74.42 | 69.69 | 75.77 |  |
| 15EEE180 | Workshop B  | 64.82 | 64.82 | 64.82 | 64.82 |       |       |  |
| 15ENG111 | Communicative English I                                   | 87.14 | 90.46 | 90.89 | 83.71 | 83.94 |       |  |
| 15MAT111 | Calculus, Matrix Algebra                                  | 80.87 | 84.54 | 86.36 | 81.10 | 82.65 | 83.96 |  |
| 15MAT121 | Vector Calculus and Ordinary Differential Equations       | 64.55 | 66.31 | 65.03 | 61.40 | 70.38 | 72.60 |  |
| 15MEC100 | Engineering Drawing -CAD                                  | 63.85 | 63.85 | 63.85 | 63.85 | 63.85 | 75.00 |  |
| 15MEC101 | Engineering Drawing-CAD-II                                | 69.45 | 69.45 | 69.45 | 69.45 | 69.45 |       |  |
| 15MEC102 | Engineering Mechanics                                     | 77.80 | 72.33 | 68.96 | 80.54 | 80.54 |       |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                    | 47.74 | 49.53 | 53.10 | 62.74 | 63.31 |       |  |
| 15MEC180 | Workshop A  | 61.00 | 61.00 | 61.00 | 61.00 |       |       |  |
| 15CHY100 | Chemistry   | 62.20 | 66.59 | 67.06 |       |       |       |  |
| 15CHY181 | Chemistry Lab.  | 71.53 | 71.53 | 71.53 | 71.53 | 71.53 |       |  |
| 15PHY100 | Physics   | 69.19 | 66.72 | 64.52 |       |       |       |  |
| 15PHY181 | Physics Lab   | 91.34 | 91.34 | 91.34 |       |       |       |  |

Sample Calculations of CO-Attainment:

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Con<br>Attainm          | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|-------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indire | irect<br>5 of<br>ct | (%)    | Yes/No     |
|        |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                    | Level               |        |            |
|        | CO1 | 90.84              | 3          | 86.74                | 3            | 88.79                 | 3.00        | 76.15      | 3     | 86.26                         | 3.00                | 50.00  | YES        |
|        | CO2 | 88.21              | 3          | 86.74                | 3            | 87.48                 | 3.00        | 75.84      | 3     | 85.15                         | 3.00                | 50.00  | YES        |
| 15CSE  | CO3 | 91.33              | 3          | 86.74                | 3            | 89.04                 | 3.00        | 75.60      | 3     | 86.35                         | 3.00                | 50.00  | YES        |
| 100    | CO4 | 90.35              | 3          | 86.74                | 3            | 88.55                 | 3.00        | 75.85      | 3     | 86.01                         | 3.00                | 50.00  | YES        |
|        | CO5 |                    |            |                      |              |                       |             |            |       |                               |                     |        |            |
|        | CO6 |                    |            |                      |              |                       |             |            |       |                               |                     |        |            |

|        |     | Internal<br>Examination |       | InternalEnd SemesterExaminationExamination |       | Direct                       | Direct |            | _     |   | ırse<br>ent | Target | Attainment |
|--------|-----|-------------------------|-------|--|-------|------------------------------|--------|------------|-------|---|-------------|--------|------------|
| Course | COs | (CIE)                   | )     | (SEE)                                      |       | 50% of CIE and<br>50% of SEE |        | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |             | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                                 | Level | Attainment*                  | Level  | Attainment | Level | Attainment                              | Level       |        |            |
|        | CO1 | 93.59                   | 3     | 29.64                                      | 1     | 61.61                        | 2.00   | 76.15      | 3     | 64.52                                   | 2.20        | 50.00  | YES        |
|        | CO2 | 75.32                   | 3     | 29.64                                      | 1     | 52.48                        | 2.00   | 75.84      | 3     | 57.15                                   | 2.20        | 50.00  | YES        |
| 15CSE  | CO3 | 86.69                   | 3     | 29.64                                      | 1     | 58.16                        | 2.00   | 75.60      | 3     | 61.65                                   | 2.20        | 50.00  | YES        |
| 102    | CO4 | 81.63                   | 3     | 29.64                                      | 1     | 55.64                        | 2.00   | 75.85      | 3     | 59.68                                   | 2.20        | 50.00  | YES        |
|        | CO5 |                         |       |  |       |                              |        |            |       |   |             |        |            |
|        | CO6 |                         |       |  |       |                              |        |            |       |   |             |        |            |

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|        |     | Internal<br>Examination |       | al End Semester<br>tion Examination |       | Direct                       |       | 4          |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-------------------------------------|-------|------------------------------|-------|------------|-------|---|-------|--------|------------|
| Course | COs | (CIE)                   |       | (SEE)                               |       | 50% of CIE and<br>50% of SEE |       | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                          | Level | Attainment*                  | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 93.25                   | 3     | 84.28                               | 3     | 88.77                        | 3.00  | 80.66      | 3     | 87.14                                   | 3.00  | 50.00  | YES        |
|        | CO2 | 101.54                  | 3     | 84.28                               | 3     | 92.91                        | 3.00  | 80.66      | 3     | 90.46                                   | 3.00  | 50.00  | YES        |
| 15ENG  | CO3 | 102.60                  | 3     | 84.28                               | 3     | 93.44                        | 3.00  | 80.66      | 3     | 90.89                                   | 3.00  | 50.00  | YES        |
| 111    | CO4 | 84.67                   | 3     | 84.28                               | 3     | 84.47                        | 3.00  | 80.66      | 3     | 83.71                                   | 3.00  | 50.00  | YES        |
|        | CO5 | 85.25                   | 3     | 84.28                               | 3     | 84.76                        | 3.00  | 80.66      | 3     | 83.94                                   | 3.00  | 50.00  | YES        |
|        | CO6 |                         |       |                                     |       |                              |       |            |       |   |       |        |            |

|        |     | Internal<br>Examination |       | al End Semester<br>tion Examination |       | Direct                       |       | _          |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-------------------------------------|-------|------------------------------|-------|------------|-------|---|-------|--------|------------|
| Course | COs | (CIE)                   | )     | (SEE)                               |       | 50% of CIE and<br>50% of SEE |       | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                          | Level | Attainment*                  | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 80.97                   | 3     | 78.26                               | 3     | 79.61                        | 3.00  | 85.91      | 3     | 80.87                                   | 3.00  | 50.00  | YES        |
|        | CO2 | 90.14                   | 3     | 78.26                               | 3     | 84.20                        | 3.00  | 85.91      | 3     | 84.54                                   | 3.00  | 50.00  | YES        |
| 15MAT  | CO3 | 94.69                   | 3     | 78.26                               | 3     | 86.47                        | 3.00  | 85.91      | 3     | 86.36                                   | 3.00  | 50.00  | YES        |
| 111    | CO4 | 81.55                   | 3     | 78.26                               | 3     | 79.90                        | 3.00  | 85.91      | 3     | 81.10                                   | 3.00  | 50.00  | YES        |
|        | CO5 | 85.41                   | 3     | 78.26                               | 3     | 81.84                        | 3.00  | 85.91      | 3     | 82.65                                   | 3.00  | 50.00  | YES        |
|        | CO6 | 88.70                   | 3     | 78.26                               | 3     | 83.48                        | 3.00  | 85.91      | 3     | 83.96                                   | 3.00  | 50.00  | YES        |

|        |     | Internal<br>Examination |       | End Semester<br>Examination |       | Direct                       |       | _          |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-----------------------------|-------|------------------------------|-------|------------|-------|---|-------|--------|------------|
| Course | COs | (CIE)                   | )     | (SEE)                       |       | 50% of CIE and<br>50% of SEE |       | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                  | Level | Attainment*                  | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 54.12                   | 2     | 64.46                       | 3     | 59.29                        | 2.50  | 82.10      | 3     | 63.85                                   | 2.60  | 50.00  | YES        |
|        | CO2 | 54.12                   | 2     | 64.46                       | 3     | 59.29                        | 2.50  | 82.10      | 3     | 63.85                                   | 2.60  | 50.00  | YES        |
| 15MEC  | CO3 | 54.12                   | 2     | 64.46                       | 3     | 59.29                        | 2.50  | 82.10      | 3     | 63.85                                   | 2.60  | 50.00  | YES        |
| 100    | CO4 | 54.12                   | 2     | 64.46                       | 3     | 59.29                        | 2.50  | 82.10      | 3     | 63.85                                   | 2.60  | 50.00  | YES        |
|        | CO5 | 54.12                   | 2     | 64.46                       | 3     | 59.29                        | 2.50  | 82.10      | 3     | 63.85                                   | 2.60  | 50.00  | YES        |
|        | CO6 | 69.44                   | 3     | 77.01                       | 3     | 73.23                        | 3.00  | 82.10      | 3     | 75.00                                   | 3.00  | 50.00  | YES        |

 Table B.8.4.2(e) CO-Attainment Level 2016-2017 (For 2015 onwards)

| Course<br>Code | Course Title                               | CO1  | CO2  | CO3  | CO4  | CO5  | CO6  | CO7  | <b>CO8</b> |
|----------------|--|------|------|------|------|------|------|------|------------|
| 15AES111       | Introduction to Aerospace Technology       | 2.60 | 3.00 | 2.60 | 2.20 | 2.20 | 2.60 |      |            |
| 15CHE111       | Introduction to Chemical Engineering       | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00       |
| 15CHE112       | Material Balances                          | 3.00 | 2.20 | 2.20 | 2.20 |      |      |      |            |
| 15CVL102       | Mechanics: Statics and Dynamics            | 2.20 | 1.80 | 2.20 | 2.20 | 2.20 |      |      |            |
| 15CVL111       | Introduction to Civil Engineering          | 2.20 | 2.20 | 2.20 |      |      |      |      |            |
| 15CVL112       | Engineering Graphics-CAD                   | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |      |            |
| 15CSE100       | Computational Thinking and Problem Solving | 3.00 | 3.00 | 3.00 | 3.00 |      |      |      |            |
| 15CSE102       | Computer Programming                       | 2.80 | 3.00 | 3.00 | 2.80 |      |      |      |            |

| 15CSE111 | Computer Science Essentials                               | 2.80 | 3.00 | 3.00 | 2.80 | 2.60 | 2.80 |  |
|----------|---|------|------|------|------|------|------|--|
| 15CSE180 | Computer Programming Lab                                  | 2.40 | 2.60 | 2.60 | 2.40 |      |      |  |
| 15CUL101 | Cultural Education -1                                     | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15CUL111 | Cultural Education-2                                      | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15ECE111 | Solid State Devices                                       | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 |      |  |
| 15ECE112 | Fundamentals of Electrical Technology                     | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |  |
| 15EEE111 | Fundamentals of Electrical and Electronics<br>Engineering | 2.60 | 3.00 | 2.60 | 3.00 | 2.60 | 3.00 |  |
| 15EEE180 | Workshop B  | 2.60 | 2.60 | 2.60 | 2.60 |      |      |  |
| 15ENG111 | Communicative English I                                   | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MAT111 | Calculus, Matrix Algebra                                  | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |  |
| 15MAT121 | Vector Calculus and Ordinary Differential Equations       | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |  |
| 15MEC100 | Engineering Drawing -CAD                                  | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |  |
| 15MEC101 | Engineering Drawing-CAD-II                                | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MEC102 | Engineering Mechanics                                     | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                    | 3.00 | 3.00 | 2.60 | 3.00 | 3.00 |      |  |
| 15MEC180 | Workshop A  | 2.60 | 2.60 | 2.60 | 2.60 |      |      |  |
| 15CHY100 | Chemistry   | 3.00 | 3.00 | 3.00 |      |      |      |  |
| 15CHY181 | Chemistry Lab.  | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |  |
| 15PHY100 | Physics   | 2.60 | 2.60 | 2.60 |      |      |      |  |
| 15PHY181 | Physics Lab   | 3.00 | 3.00 | 3.00 |      |      |      |  |

| abic D.0.4.2() | (1) CO-Attainment 1 cr centage- 2010-2017 (F01 20         | 15 Unwar | usj   |       |       |       |       |       |       |
|----------------|---|----------|-------|-------|-------|-------|-------|-------|-------|
| Course<br>Code | Course Title  | CO1      | CO2   | CO3   | CO4   | CO5   | CO6   | CO7   | CO8   |
| 15AES111       | Introduction to Aerospace Technology                      | 74.15    | 74.15 | 60.59 | 56.52 | 63.30 | 67.37 |       |       |
| 15CHE111       | Introduction to Chemical Engineering                      | 86.83    | 97.71 | 90.43 | 70.43 | 84.99 | 81.31 | 83.15 | 79.55 |
| 15CHE112       | Material Balances   | 69.32    | 56.60 | 56.60 | 58.44 |       |       |       |       |
| 15CVL102       | Mechanics: Statics and Dynamics                           | 57.23    | 50.51 | 58.51 | 71.64 | 91.19 |       |       |       |
| 15CVL111       | Introduction to Civil Engineering                         | 70.15    | 67.69 | 79.15 |       |       |       |       |       |
| 15CVL112       | Engineering Graphics-CAD                                  | 71.58    | 68.77 | 70.18 | 70.18 | 70.18 |       |       |       |
| 15CSE100       | Computational Thinking and Problem Solving                | 79.50    | 79.22 | 78.99 | 80.80 |       |       |       |       |
| 15CSE102       | Computer Programming                                      | 72.29    | 73.32 | 79.66 | 77.43 |       |       |       |       |
| 15CSE111       | Computer Science Essentials                               | 71.47    | 77.26 | 73.51 | 76.94 | 71.35 | 74.94 |       |       |
| 15CSE180       | Computer Programming Lab                                  | 56.75    | 58.05 | 57.65 | 56.25 |       |       |       |       |
| 15CUL101       | Cultural Education -1                                     | 89.93    | 93.43 | 93.72 | 94.53 | 94.68 |       |       |       |
| 15CUL111       | Cultural Education-2                                      | 87.75    | 89.18 | 89.08 | 89.90 | 89.37 |       |       |       |
| 15ECE111       | Solid State Devices                                       | 56.82    | 58.08 | 64.14 | 67.17 | 67.93 |       |       |       |
| 15ECE112       | Fundamentals of Electrical Technology                     | 75.70    | 75.70 | 75.70 | 75.70 | 83.94 | 83.94 |       |       |
| 15EEE111       | Fundamentals of Electrical and Electronics<br>Engineering | 71.77    | 72.05 | 75.09 | 79.24 | 77.72 | 80.75 |       |       |
| 15EEE180       | Workshop B  | 74.38    | 74.38 | 74.38 | 74.38 |       |       |       |       |
| 15ENG111       | Communicative English I                                   | 80.29    | 81.72 | 81.72 | 77.58 | 77.58 |       |       |       |

75.38

75.83

86.40

75.49

73.64

75.34

 Table B.8.4.2(f) CO-Attainment Percentage- 2016-2017 (For 2015 onwards)

Calculus, Matrix Algebra

15MAT111

| 15MAT121 | Vector Calculus and Ordinary Differential<br>Equations | 78.45 | 82.76 | 85.55 | 79.78 | 81.38 | 82.18 |  |
|----------|--|-------|-------|-------|-------|-------|-------|--|
| 15MEC100 | Engineering Drawing -CAD                               | 74.94 | 75.16 | 75.11 | 74.94 | 74.95 | 80.98 |  |
| 15MEC101 | Engineering Drawing-CAD-II                             | 76.74 | 76.74 | 83.68 | 76.74 | 86.74 |       |  |
| 15MEC102 | Engineering Mechanics                                  | 82.00 | 77.92 | 78.13 | 86.90 | 86.90 |       |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                 | 79.79 | 68.41 | 67.71 | 69.44 | 78.75 |       |  |
| 15MEC180 | Workshop A   | 60.33 | 60.33 | 60.33 | 60.33 |       |       |  |
| 15CHY100 | Chemistry  | 75.89 | 77.85 | 77.11 |       |       |       |  |
| 15CHY181 | Chemistry Lab.   | 66.69 | 66.69 | 66.69 | 66.69 | 66.69 |       |  |
| 15PHY100 | Physics  | 72.25 | 69.51 | 70.50 |       |       |       |  |
| 15PHY181 | Physics Lab  | 91.44 | 91.44 | 91.44 |       |       |       |  |

Sample Calculations of CO-Attainment:

|        |     | Internal<br>Examination |       | End Semester<br>Examination |       | Direct      |                              |            |       | Final Con<br>Attainm                    | urse<br>ent | Target | Attainment |
|--------|-----|-------------------------|-------|-----------------------------|-------|-------------|------------------------------|------------|-------|---|-------------|--------|------------|
| Course | COs | (CIE)                   | CIE)  |                             | (SEE) |             | 50% of CIE and<br>50% of SEE |            | t     | 80% of Direct<br>and 20% of<br>Indirect |             | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                  | Level | Attainment* | Level                        | Attainment | Level | Attainment                              | Level       |        |            |
|        | CO1 | 80.36                   | 3     | 72.85                       | 3     | 76.61       | 3.00                         | 55.00      | 2     | 72.29                                   | 2.80        | 50.00  | YES        |
|        | CO2 | 78.46                   | 3     | 72.85                       | 3     | 75.66       | 3.00                         | 64.00      | 3     | 73.32                                   | 3.00        | 50.00  | YES        |
| 15CSE  | CO3 | 95.29                   | 3     | 72.85                       | 3     | 84.07       | 3.00                         | 62.00      | 3     | 79.66                                   | 3.00        | 50.00  | YES        |
| 102    | CO4 | 93.21                   | 3     | 72.85                       | 3     | 83.03       | 3.00                         | 55.00      | 2     | 77.43                                   | 2.80        | 50.00  | YES        |
|        | CO5 |                         |       |                             |       |             |                              |            |       |   |             |        |            |
|        | CO6 |                         |       |                             |       |             |                              |            |       |   |             |        |            |

|        |     | Internal<br>Examination |       | End Semester<br>Examination |       | Direct                       |       |            |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-----------------------------|-------|------------------------------|-------|------------|-------|---|-------|--------|------------|
| Course | COs | (CIE)                   | )     | (SEE)                       |       | 50% of CIE and<br>50% of SEE |       | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                  | Level | Attainment*                  | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 96.96                   | 3     | 62.32                       | 3     | 79.64                        | 3.00  | 82.88      | 3     | 80.29                                   | 3.00  | 50.00  | YES        |
|        | CO2 | 100.54                  | 3     | 62.32                       | 3     | 81.43                        | 3.00  | 82.88      | 3     | 81.72                                   | 3.00  | 50.00  | YES        |
| 15ENG  | CO3 | 100.54                  | 3     | 62.32                       | 3     | 81.43                        | 3.00  | 82.88      | 3     | 81.72                                   | 3.00  | 50.00  | YES        |
| 111    | CO4 | 90.18                   | 3     | 62.32                       | 3     | 76.25                        | 3.00  | 82.88      | 3     | 77.58                                   | 3.00  | 50.00  | YES        |
|        | CO5 | 90.18                   | 3     | 62.32                       | 3     | 76.25                        | 3.00  | 82.88      | 3     | 77.58                                   | 3.00  | 50.00  | YES        |
|        | CO6 |                         |       |                             |       |                              |       |            |       |   |       |        |            |

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|        |     | Internal<br>Examination |       | End Semester<br>Examination |       | Direct                       |       | -          |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-----------------------------|-------|------------------------------|-------|------------|-------|---|-------|--------|------------|
| Course | COs | (CIE)                   | )     | (SEE)                       |       | 50% of CIE and<br>50% of SEE |       | Indirect   |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                  | Level | Attainment*                  | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 81.24                   | 3     | 73.33                       | 3     | 77.29                        | 3.00  | 83.11      | 3     | 78.45                                   | 3.00  | 50.00  | YES        |
|        | CO2 | 92.00                   | 3     | 73.33                       | 3     | 82.67                        | 3.00  | 83.11      | 3     | 82.76                                   | 3.00  | 50.00  | YES        |
| 15MAT  | CO3 | 86.48                   | 3     | 73.33                       | 3     | 79.90                        | 3.00  | 83.11      | 3     | 80.55                                   | 3.00  | 50.00  | YES        |
| 121    | CO4 | 84.57                   | 3     | 73.33                       | 3     | 78.95                        | 3.00  | 83.11      | 3     | 79.78                                   | 3.00  | 50.00  | YES        |
|        | CO5 | 88.57                   | 3     | 73.33                       | 3     | 80.95                        | 3.00  | 83.11      | 3     | 81.38                                   | 3.00  | 50.00  | YES        |
|        | CO6 | 90.57                   | 3     | 73.33                       | 3     | 81.95                        | 3.00  | 83.11      | 3     | 82.18                                   | 3.00  | 50.00  | YES        |

| Course | COs | Internal<br>Examination |       | End Semester<br>Examination |       | Direct<br>50% of CIE and<br>50% of SEE |       | Indirect   |       | Final Course<br>Attainment              |       | Target | Attainment |
|--------|-----|-------------------------|-------|-----------------------------|-------|--|-------|------------|-------|---|-------|--------|------------|
|        |     | (CIE)                   |       | (SEE)                       |       |  |       |            |       | 80% of Direct<br>and 20% of<br>Indirect |       | (%)    | Yes/No     |
|        |     | Attainment              | Level | Attainment                  | Level | Attainment*                            | Level | Attainment | Level | Attainment                              | Level |        |            |
|        | CO1 | 76.57                   | 3     | 43.21                       | 2     | 59.89                                  | 2.50  | 62.09      | 3     | 60.33                                   | 2.60  | 50.00  | YES        |
|        | CO2 | 76.57                   | 3     | 43.21                       | 2     | 59.89                                  | 2.50  | 62.09      | 3     | 60.33                                   | 2.60  | 50.00  | YES        |
| 15MEC  | CO3 | 76.57                   | 3     | 43.21                       | 2     | 59.89                                  | 2.50  | 62.09      | 3     | 60.33                                   | 2.60  | 50.00  | YES        |
| 180    | CO4 | 76.57                   | 3     | 43.21                       | 2     | 59.89                                  | 2.50  | 62.09      | 3     | 60.33                                   | 2.60  | 50.00  | YES        |
|        | CO5 |                         |       |                             |       |  |       |            |       |   |       |        |            |
|        | CO6 |                         |       |                             |       |  |       |            |       |   |       |        |            |

| Course | COs | Internal<br>Examination<br>s (CIE) |       | End Semester<br>Examination<br>(SEE) |       | Direct<br>50% of CIE and<br>50% of SEE |       | Indirect   |       | Final Course<br>Attainment<br>80% of Direct<br>and 20% of<br>Indirect |       | Target | Attainment |
|--------|-----|------------------------------------|-------|--------------------------------------|-------|--|-------|------------|-------|---|-------|--------|------------|
|        |     |                                    |       |                                      |       |  |       |            |       |   |       | (%)    | Yes/No     |
|        |     | Attainment                         | Level | Attainment                           | Level | Attainment*                            | Level | Attainment | Level | Attainment  | Level |        |            |
|        | CO1 | 83.60                              | 3     | 59.87                                | 2     | 71.73                                  | 2.50  | 74.33      | 3     | 72.25   | 2.60  | 50.00  | YES        |
|        | CO2 | 76.74                              | 3     | 59.87                                | 2     | 68.30                                  | 2.50  | 74.33      | 3     | 69.51   | 2.60  | 50.00  | YES        |
| 15PHY  | CO3 | 79.22                              | 3     | 59.87                                | 2     | 69.54                                  | 2.50  | 74.33      | 3     | 70.50   | 2.60  | 50.00  | YES        |
| 100    | CO4 |                                    |       |                                      |       |  |       |            |       |   |       |        |            |
|        | CO5 |                                    |       |                                      |       |  |       |            |       |   |       |        |            |
|        | CO6 |                                    |       |                                      |       |  |       |            |       |   |       |        |            |

| Course<br>Code | Course Title  | CO1  | CO2  | CO3  | CO4  | CO5  | CO6  | <b>CO7</b> | <b>CO8</b> |
|----------------|---|------|------|------|------|------|------|------------|------------|
| 15AES111       | Introduction to Aerospace Technology                      | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 |            |            |
| 15CHE111       | Introduction to Chemical Engineering                      | 3.00 | 3.00 | 3.00 | 3.00 | 2.00 | 3.00 | 3.00       | 3.00       |
| 15CHE112       | Material Balances   | 3.00 | 3.00 | 3.00 | 2.00 |      |      |            |            |
| 15CVL102       | Mechanics: Statics and Dynamics                           | 2.60 | 2.60 | 2.20 | 2.20 | 2.20 |      |            |            |
| 15CVL111       | Introduction to Civil Engineering                         | 2.60 | 2.60 | 2.60 |      |      |      |            |            |
| 15CVL112       | Engineering Graphics-CAD                                  | 3.00 | 2.68 | 3.00 | 2.68 | 3.00 |      |            |            |
| 15CSE100       | Computational Thinking and Problem Solving                | 3.00 | 3.00 | 3.00 | 3.00 |      |      |            |            |
| 15CSE102       | Computer Programming                                      | 2.80 | 3.00 | 2.60 | 1.60 |      |      |            |            |
| 15CSE111       | Computer Science Essentials                               | 2.80 | 3.00 | 3.00 | 2.80 | 2.60 | 2.80 |            |            |
| 15CSE180       | Computer Programming Lab                                  | 2.20 | 2.20 | 2.20 | 2.00 |      |      |            |            |
| 15CUL101       | Cultural Education -1                                     | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |            |            |
| 15CUL111       | Cultural Education-2                                      | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |            |            |
| 15ECE111       | Solid State Devices                                       | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |      |            |            |
| 15ECE112       | Fundamentals of Electrical Technology                     | 2.00 | 3.00 | 2.50 | 2.50 | 2.50 | 2.00 |            |            |
| 15EEE111       | Fundamentals of Electrical and Electronics<br>Engineering | 2.60 | 2.60 | 3.00 | 2.60 | 3.00 | 2.60 |            |            |
| 15EEE180       | Workshop B  | 2.00 | 2.00 | 2.00 | 2.00 |      |      |            |            |
| 15ENG111       | Communicative English I                                   | 3.00 | 2.52 | 3.00 | 3.00 | 2.82 |      |            |            |
| 15MAT111       | Calculus, Matrix Algebra                                  | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |            |            |

 Table B.8.4.2(g) CO-Attainment Level 2017-2018 (For 2015 onwards)

| 15MAT121 | Vector Calculus and Ordinary Differential<br>Equations | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |  |
|----------|--|------|------|------|------|------|------|--|
| 15MEC100 | Engineering Drawing -CAD                               | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 3.00 |  |
| 15MEC101 | Engineering Drawing-CAD-II                             | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MEC102 | Engineering Mechanics                                  | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |      |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                 | 2.20 | 2.20 | 2.20 | 2.20 | 2.20 |      |  |
| 15MEC180 | Workshop A   | 3.00 | 3.00 | 3.00 | 3.00 |      |      |  |
| 15CHY100 | Chemistry  | 2.60 | 2.60 | 2.60 |      |      |      |  |
| 15CHY181 | Chemistry Lab.   | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |      |  |
| 15PHY100 | Physics  | 2.60 | 2.60 | 2.60 |      |      |      |  |
| 15PHY181 | Physics Lab  | 3.00 | 3.00 | 3.00 |      |      |      |  |

| Course   | Course Title  |       |       |       |       |       |       |       |            |
|----------|---|-------|-------|-------|-------|-------|-------|-------|------------|
| Code     |   | CO1   | CO2   | CO3   | CO4   | CO5   | CO6   | CO7   | <b>CO8</b> |
|          |   |       |       |       |       |       |       |       |            |
| 15AES111 | Introduction to Aerospace Technology                      | 53.97 | 60.32 | 58.73 | 58.73 | 61.90 | 63.49 |       |            |
| 15CHE111 | Introduction to Chemical Engineering                      | 60.07 | 75.82 | 61.45 | 62.62 | 57.90 | 62.04 | 73.10 | 80.63      |
| 15CHE112 | Material Balances   | 72.77 | 72.84 | 65.83 | 59.59 |       |       |       |            |
| 15CVL102 | Mechanics: Statics and Dynamics                           | 70.22 | 65.62 | 70.65 | 65.36 | 61.70 |       |       |            |
| 15CVL111 | Introduction to Civil Engineering                         | 57.02 | 60.29 | 62.67 |       |       |       |       |            |
| 15CVL112 | Engineering Graphics-CAD                                  | 85.92 | 89.00 | 84.79 | 87.78 | 82.30 |       |       |            |
| 15CSE100 | Computational Thinking and Problem<br>Solving             | 79.47 | 77.67 | 79.49 | 79.38 |       |       |       |            |
| 15CSE102 | Computer Programming                                      | 68.08 | 67.55 | 59.23 | 37.21 |       |       |       |            |
| 15CSE111 | Computer Science Essentials                               | 71.11 | 75.56 | 73.63 | 76.95 | 69.20 | 74.95 |       |            |
| 15CSE180 | Computer Programming Lab                                  | 56.95 | 58.75 | 58.35 | 56.95 |       |       |       |            |
| 15CUL101 | Cultural Education -1                                     | 81.90 | 83.87 | 79.77 | 81.78 | 83.31 |       |       |            |
| 15CUL111 | Cultural Education-2                                      | 82.98 | 81.10 | 78.29 | 78.82 | 79.96 |       |       |            |
| 15ECE111 | Solid State Devices                                       | 52.70 | 50.06 | 51.51 | 50.51 | 51.58 |       |       |            |
| 15ECE112 | Fundamentals of Electrical Technology                     | 59.16 | 65.92 | 52.15 | 65.92 | 71.65 | 64.65 |       |            |
| 15EEE111 | Fundamentals of Electrical and Electronics<br>Engineering | 66.86 | 58.84 | 66.59 | 70.20 | 79.96 | 69.57 |       |            |
| 15EEE180 | Workshop B  | 67.83 | 67.83 | 67.83 | 67.83 |       |       |       |            |
| 15ENG111 | Communicative English I                                   | 74.44 | 85.94 | 82.32 | 72.09 | 69.95 |       |       |            |

 Table B.8.4.2(h) CO-Attainment Percentage 2017-2018 (For 2015 onwards)
| 15MAT111 | Calculus, Matrix Algebra                               | 72.79 | 74.86 | 85.31 | 71.83 | 73.84 | 73.43 |  |
|----------|--|-------|-------|-------|-------|-------|-------|--|
| 15MAT121 | Vector Calculus and Ordinary Differential<br>Equations | 76.56 | 81.49 | 78.92 | 77.74 | 79.20 | 80.40 |  |
| 15MEC100 | Engineering Drawing -CAD                               | 70.83 | 70.83 | 70.83 | 70.83 | 70.83 | 80.81 |  |
| 15MEC101 | Engineering Drawing-CAD-II                             | 81.54 | 81.54 | 81.54 | 81.54 | 81.54 |       |  |
| 15MEC102 | Engineering Mechanics                                  | 80.47 | 80.65 | 80.17 | 86.64 | 86.64 |       |  |
| 15MEC111 | Fundamentals of Mechanical Engineering                 | 62.53 | 61.79 | 68.46 | 69.20 | 69.57 |       |  |
| 15MEC180 | Workshop A   | 74.77 | 74.77 | 74.77 | 74.77 |       |       |  |
| 15CHY100 | Chemistry  | 68.23 | 68.24 | 71.47 |       |       |       |  |
| 15CHY181 | Chemistry Lab.   | 65.68 | 65.68 | 65.68 | 65.68 | 65.68 |       |  |
| 15PHY100 | Physics  | 71.16 | 68.54 | 69.82 |       |       |       |  |
| 15PHY181 | Physics Lab  | 88.01 | 88.01 | 88.01 |       |       |       |  |

Sample Calculations of CO-Attainment:

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                 |             |            |       | Final Con<br>Attainm          | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|--------------|------------------------|-------------|------------|-------|-------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |              | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indire | irect<br>6 of<br>ct | (%)    | Yes/No     |
| C      |     | Attainment         | Level      | Attainment           | Level        | Attainment*            | Level       | Attainment | Level | Attainment                    | Level               |        |            |
|        | CO1 | 56.56              | 2          | 58.33                | 2            | 57.44                  | 2.00        | 55.00      | 2     | 56.95                         | 2.00                | 50.00  | YES        |
|        | CO2 | 56.56              | 2          | 58.33                | 2            | 57.44                  | 2.00        | 64.00      | 3     | 58.75                         | 2.20                | 50.00  | YES        |
| 15CSE  | CO3 | 56.56              | 2          | 58.33                | 2            | 57.44                  | 2.00        | 62.00      | 3     | 58.35                         | 2.20                | 50.00  | YES        |
| 180    | CO4 | 56.56              | 2          | 58.33                | 2            | 57.44                  | 2.00        | 55.00      | 2     | 56.95                         | 2.00                | 50.00  | YES        |
|        | CO5 |                    |            |                      |              |                        |             |            |       |                               |                     |        |            |
|        | CO6 |                    |            |                      |              |                        |             |            |       |                               |                     |        |            |

|  |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Cou<br>Attainm            | urse<br>ent         | Target | Attainment |
|--|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course   | COs | (CIE)              |            | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>2t | (%)    | Yes/No     |
| Course COs<br>CO1<br>15MEC CO2<br>100 CO2<br>CO2<br>CO2<br>CO2<br>CO2<br>CO2<br>CO2<br>CO2 |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|  | CO1 | 83.89              | 3          | 56.22                | 2            | 70.06                 | 2.50        | 73.91      | 3     | 70.83                           | 2.60                | 50.00  | YES        |
|  | CO2 | 83.89              | 3          | 56.22                | 2            | 70.06                 | 2.50        | 73.91      | 3     | 70.83                           | 2.60                | 50.00  | YES        |
| 15MEC  | CO3 | 83.89              | 3          | 56.22                | 2            | 70.06                 | 2.50        | 73.91      | 3     | 70.83                           | 2.60                | 50.00  | YES        |
| 100  | CO4 | 83.89              | 3          | 56.22                | 2            | 70.06                 | 2.50        | 73.91      | 3     | 70.83                           | 2.60                | 50.00  | YES        |
|  | CO5 | 83.89              | 3          | 56.22                | 2            | 70.06                 | 2.50        | 73.91      | 3     | 70.83                           | 2.60                | 50.00  | YES        |
|  | CO6 | 91.95              | 3          | 73.13                | 3            | 82.54                 | 3.00        | 73.91      | 3     | 80.81                           | 3.00                | 50.00  | YES        |

|          |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ster<br>tion | Direct                |             |            |       | Final Co<br>Attainm             | urse<br>ent         | Target | Attainment |
|----------|-----|--------------------|------------|----------------------|--------------|-----------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course C | COs | (CIE)              | )          | (SEE)                |              | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|          |     | Attainment         | Level      | Attainment           | Level        | Attainment*           | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|          | CO1 | 86.59              | 3          | 62.74                | 3            | 74.67                 | 3.00        | 75.19      | 3     | 74.77                           | 3.00                | 50.00  | YES        |
|          | CO2 | 86.59              | 3          | 62.74                | 3            | 74.67                 | 3.00        | 75.19      | 3     | 74.77                           | 3.00                | 50.00  | YES        |
| 15MEC    | CO3 | 86.59              | 3          | 62.74                | 3            | 74.67                 | 3.00        | 75.19      | 3     | 74.77                           | 3.00                | 50.00  | YES        |
| 180      | CO4 | 86.59              | 3          | 62.74                | 3            | 74.67                 | 3.00        | 75.19      | 3     | 74.77                           | 3.00                | 50.00  | YES        |
|          | CO5 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |
|          | CO6 |                    |            |                      |              |                       |             |            |       |                                 |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ester<br>tion | Direct                |             |            |       | Final Co<br>Attainm            | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|---------------|-----------------------|-------------|------------|-------|--------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |               | 50% of CH<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
| C      |     | Attainment         | Level      | Attainment           | Level         | Attainment*           | Level       | Attainment | Level | Attainment                     | Level               |        |            |
|        | CO1 | 80.87              | 3          | 45.92                | 2             | 63.40                 | 2.50        | 74.82      | 3     | 65.68                          | 2.60                | 50.00  | YES        |
|        | CO2 | 80.87              | 3          | 45.92                | 2             | 63.40                 | 2.50        | 74.82      | 3     | 65.68                          | 2.60                | 50.00  | YES        |
| 15CH   | CO3 | 80.87              | 3          | 45.92                | 2             | 63.40                 | 2.50        | 74.82      | 3     | 65.68                          | 2.60                | 50.00  | YES        |
| Y181   | CO4 | 80.87              | 3          | 45.92                | 2             | 63.40                 | 2.50        | 74.82      | 3     | 65.68                          | 2.60                | 50.00  | YES        |
| (      | CO5 | 80.87              | 3          | 45.92                | 2             | 63.40                 | 2.50        | 74.82      | 3     | 65.68                          | 2.60                | 50.00  | YES        |
|        | CO6 |                    |            |                      |               |                       |             |            |       |                                |                     |        |            |

|          |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ester<br>tion | Direct                 | ;           |            |       | Final Cou<br>Attainm            | ırse<br>ent         | Target | Attainment |
|----------|-----|--------------------|------------|----------------------|---------------|------------------------|-------------|------------|-------|---------------------------------|---------------------|--------|------------|
| Course ( | COs | (CIE)              | )          | (SEE)                |               | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of Di<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
|          |     | Attainment         | Level      | Attainment           | Level         | Attainment*            | Level       | Attainment | Level | Attainment                      | Level               |        |            |
|          | CO1 | 84.25              | 3          | 57.18                | 2             | 70.71                  | 2.50        | 72.96      | 3     | 71.16                           | 2.60                | 50.00  | YES        |
|          | CO2 | 77.28              | 3          | 57.18                | 2             | 67.23                  | 2.50        | 73.82      | 3     | 68.54                           | 2.60                | 50.00  | YES        |
| 15PHY    | CO3 | 80.56              | 3          | 57.18                | 2             | 68.87                  | 2.50        | 73.63      | 3     | 69.82                           | 2.60                | 50.00  | YES        |
| 100      | CO4 |                    |            |                      |               |                        |             |            |       |                                 |                     |        |            |
| (        | CO5 |                    |            |                      |               |                        |             |            |       |                                 |                     |        |            |
|          | CO6 |                    |            |                      |               |                        |             |            |       |                                 |                     |        |            |

|        |     | Interna<br>Examina | al<br>tion | End Seme<br>Examinat | ester<br>tion | Direct                 |             |            |       | Final Co<br>Attainm            | urse<br>ent         | Target | Attainment |
|--------|-----|--------------------|------------|----------------------|---------------|------------------------|-------------|------------|-------|--------------------------------|---------------------|--------|------------|
| Course | COs | (CIE)              | )          | (SEE)                |               | 50% of CII<br>50% of S | E and<br>EE | Indirec    | t     | 80% of D<br>and 20%<br>Indired | irect<br>5 of<br>ct | (%)    | Yes/No     |
| (      |     | Attainment         | Level      | Attainment           | Level         | Attainment*            | Level       | Attainment | Level | Attainment                     | Level               |        |            |
|        | CO1 | 98.63              | 3          | 82.96                | 3             | 90.80                  | 3.00        | 76.87      | 3     | 88.01                          | 3.00                | 50.00  | YES        |
|        | CO2 | 98.63              | 3          | 82.96                | 3             | 90.80                  | 3.00        | 76.87      | 3     | 88.01                          | 3.00                | 50.00  | YES        |
| 15PHY  | CO3 | 98.63              | 3          | 82.96                | 3             | 90.80                  | 3.00        | 76.87      | 3     | 88.01                          | 3.00                | 50.00  | YES        |
| 181    | CO4 |                    |            |                      |               |                        |             |            |       |                                |                     |        |            |
| 0      | CO5 |                    |            |                      |               |                        |             |            |       |                                |                     |        |            |
|        | CO6 |                    |            |                      |               |                        |             |            |       |                                |                     |        |            |

## 8.5. Attainment of Program Outcomes from first year courses

## 8.5.1. Indicate results of evaluation of each relevant PO and/or PSO if applicable

Table B.8.5.1(a) PO-Attainment 2014-2015.

| Course Title   | Course Code | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9  | PO10 | PO<br>11 | PO<br>12 |
|--|-------------|------|------|------|------|------|------|------|------|------|------|----------|----------|
| Computer Programming                                   | CSE100      | 2.64 | 2.65 | 2.66 |      |      |      |      |      |      |      |          |          |
| Computer Programming Lab                               | CSE180      | 2.27 | 2.27 | 2.27 |      | 2.33 |      |      |      |      |      |          |          |
| Cultural<br>Education -1                               | CUL101      |      |      |      |      |      | 2.99 | 2.99 | 2.99 | 2.99 | 2.99 | 2.99     | 2.99     |
| Cultural<br>Education-2                                | CUL102      |      |      |      |      |      | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00     | 3.00     |
| Electronics Engineering                                | ECE100      | 2.52 | 2.53 | 2.59 |      |      |      |      |      |      |      |          | 2.52     |
| Electrical Engineering                                 | EEE100      | 1.71 | 1.67 |      |      |      |      |      |      |      |      |          |          |
| Workshop B   | EEE180      | 1.25 | 1.25 | 1.25 |      |      |      |      |      | 1.25 |      |          | 1.25     |
| Communicative English                                  | ENG111      |      |      |      |      |      |      |      | 2.61 | 2.66 | 2.63 |          | 2.63     |
| Technical Communication                                | ENG112      |      |      |      |      |      |      |      | 2.98 | 2.98 | 2.98 |          | 2.98     |
| Calculus, Matrix Algebra                               | MAT111      | 2.04 | 2.05 |      |      |      |      |      |      |      |      |          |          |
| Vector Calculus<br>and Ordinary Differential Equations | MAT112      | 2.38 | 2.40 | 2.39 |      |      |      |      |      |      |      |          | 2.38     |
| Engineering Drawing                                    | MEC181      | 2.61 | 2.61 | 2.61 | 2.61 |      | 2.61 |      |      |      | 2.61 |          | 2.61     |
| CAD  | MEC182      | 2.39 | 2.39 | 2.39 |      | 2.39 |      |      |      |      | 2.39 |          | 2.39     |

| Engineering Mechanics | MEC100 | 1.99 | 1.99 | 1.98 | 1.99 |      |      |  |      |      | 1.99 |
|-----------------------|--------|------|------|------|------|------|------|--|------|------|------|
| Workshop A            | MEC180 | 2.33 | 2.33 | 2.33 |      | 2.33 |      |  | 2.33 | 2.33 | 2.33 |
| Chemistry             | CHY100 | 1.85 | 2.11 | 2.13 | 2.13 |      |      |  |      |      |      |
| Chemistry Lab.        | CHY181 | 2.61 | 2.61 | 2.61 |      |      |      |  |      |      |      |
| Physics               | PHY100 | 2.27 | 2.27 |      |      |      |      |  |      |      | 2.27 |
| Physics Lab           | PHY181 | 2.93 | 2.93 | 2.93 | 2.93 | 2.93 | 2.93 |  |      |      |      |

## Table B.8.5.1(b) PO-Attainment 2015-2016

| Course Title                                  | Course<br>Code | PO1  | PO2  | PO3  | PO4  | PO5  | PO6 | PO7 | PO8  | PO9  | PO10 | PO11 | PO12 |
|---|----------------|------|------|------|------|------|-----|-----|------|------|------|------|------|
| Introduction to Aerospace<br>Technology       | 15AES111       | 3    | 3    |      | 3    |      | 3   | 3   |      | 3    | 3    |      | 3    |
| Introduction to Chemical<br>Engineering       | 15CHE111       | 2.55 | 3.00 |      | 3.00 | 2.00 |     |     | 3.00 |      |      |      |      |
| Material Balances                             | 15CHE112       | 2.25 | 2.25 | 2.20 | 2.00 |      |     |     |      |      |      |      |      |
| Mechanics: Statics and Dynamics               | 15CVL102       | 2.6  | 2.6  |      |      |      |     |     |      |      |      |      |      |
| Introduction to Civil Engineering             | 15CVL111       | 2    |      |      |      |      | 2.2 | 2.2 |      | 2.2  |      |      |      |
| Engineering Graphics-CAD                      | 15CVL112       | 2.36 | 2.36 | 2.36 | 2.36 | 2.36 |     |     |      |      |      |      | 2.36 |
| Computational Thinking and<br>Problem Solving | 15CSE100       | 3.00 | 3.00 | 3.00 |      | 3.00 |     |     | 3.00 | 3.00 | 3.00 |      |      |
| Computer Programming                          | 15CSE102       | 2.27 | 2.27 | 2.27 |      |      |     |     |      |      |      |      |      |
| Computer Science Essentials                   | 15CSE111       | 2.54 | 2.52 | 2.52 |      |      |     |     |      |      |      |      |      |

| Computer Programming Lab                                  | 15CSE180 | 2.05 | 2.03 | 2.05 |      | 2.15 |      |      |      |      |      |      |      |
|---|----------|------|------|------|------|------|------|------|------|------|------|------|------|
| Cultural Education -1                                     | 15CUL101 |      |      |      |      |      | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 | 2.63 |
| Cultural Education-2                                      | 15CUL111 |      |      |      |      |      | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 | 2.50 |
| Solid State Devices                                       | 15ECE111 | 2.00 | 2.00 |      |      |      |      |      |      |      |      |      | 2.00 |
| Fundamentals of Electrical<br>Technology                  | 15ECE112 | 1.87 | 1.88 | 1.83 |      |      |      |      |      |      |      |      | 1.93 |
| Fundamentals of Electrical and<br>Electronics Engineering | 15EEE111 | 2.44 | 2.37 | 2.62 |      |      |      |      |      |      |      |      |      |
| Workshop B  | 15EEE180 | 2.39 | 2.39 | 2.39 |      |      |      |      | 2.39 | 2.39 | 2.39 |      | 2.39 |
| Communicative English I                                   | 15ENG111 |      |      |      |      |      |      |      | 2.95 | 2.95 | 2.95 |      | 2.95 |
| Calculus, Matrix Algebra                                  | 15MAT111 | 2.95 | 2.95 | 2.95 |      |      |      |      |      |      |      |      | 2.95 |
| Vector Calculus and Ordinary<br>Differential Equations    | 15MAT121 | 2.41 | 2.39 | 2.39 |      |      |      |      |      |      |      |      | 2.42 |
| Engineering Drawing -CAD                                  | 15MEC100 | 2.50 | 2.50 | 2.50 | 2.51 |      | 2.51 |      |      |      | 2.50 |      | 2.51 |
| Engineering Drawing-CAD-II                                | 15MEC101 | 2.60 | 2.60 | 2.60 | 2.60 |      | 2.60 |      |      |      | 2.60 |      | 2.60 |
| Engineering Mechanics                                     | 15MEC102 | 2.57 | 2.57 | 2.57 | 2.57 |      |      |      |      |      |      |      | 2.57 |
| Fundamentals of Mechanical<br>Engineering                 | 15MEC111 | 2.12 | 2.13 | 2.13 | 2.13 |      | 2.20 | 2.20 |      | 2.12 |      |      | 2.10 |
| Workshop A  | 15MEC180 | 2.49 | 2.49 | 2.49 |      | 2.49 |      |      |      | 2.49 | 2.49 |      | 2.49 |
| Chemistry   | 15CHY100 | 2.58 | 2.60 | 2.60 | 2.60 |      |      |      |      |      |      |      |      |
| Chemistry Lab.  | 15CHY181 | 2.78 | 2.78 | 2.78 |      |      |      |      |      |      |      |      |      |
| Physics   | 15PHY100 | 2.61 | 2.61 |      |      |      |      |      |      |      |      |      | 2.61 |
| Physics Lab   | 15PHY181 | 2.99 | 2.99 | 2.99 | 2.99 | 2.99 | 2.99 |      |      |      |      |      |      |

| Course Title                                  | Course<br>Code | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9  | PO10 | PO11 | PO12 |
|---|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Introduction to Aerospace<br>Technology       | 15AES111       | 2.53 | 2.60 |      | 2.40 |      | 2.67 | 2.44 |      | 2.80 | 2.50 |      | 2.42 |
| Introduction to Chemical<br>Engineering       | 15CHE111       | 3.00 | 3.00 |      | 3.00 | 3.00 |      |      | 3.00 |      |      |      |      |
| Material Balances                             | 15CHE112       | 2.25 | 2.25 | 2.20 | 2.00 |      |      |      |      |      |      |      |      |
| Mechanics: Statics and Dynamics               | 15CVL102       | 2.12 | 2.12 |      |      |      |      |      |      |      |      |      |      |
| Introduction to Civil Engineering             | 15CVL111       | 2.2  |      |      |      |      | 2.2  | 2.2  |      | 2.2  |      |      |      |
| Engineering Graphics-CAD                      | 15CVL112       | 2.6  | 2.6  | 2.6  | 2.6  | 2.6  |      |      |      |      |      |      | 2.6  |
| Computational Thinking and<br>Problem Solving | 15CSE100       | 2.95 | 2.95 | 2.95 |      | 2.95 |      |      | 2.95 | 2.95 | 2.95 |      |      |
| Computer Programming                          | 15CSE102       | 2.88 | 2.90 | 2.92 |      |      |      |      |      |      |      |      |      |
| Computer Science Essentials                   | 15CSE111       | 2.75 | 2.72 | 2.72 |      |      |      |      |      |      |      |      |      |
| Computer Programming Lab                      | 15CSE180       | 2.37 | 2.35 | 2.37 |      | 2.47 |      |      |      |      |      |      |      |
| Cultural Education -1                         | 15CUL101       |      |      |      |      |      | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 | 2.60 |
| Cultural Education-2                          | 15CUL111       |      |      |      |      |      | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 | 2.58 |
| Solid State Devices                           | 15ECE111       | 2.43 | 2.43 |      |      |      |      |      |      |      |      |      | 2.43 |

# Table B.8.5.1(c) PO-Attainment 2016-2017

| 2 | ~ | 2 |
|---|---|---|
| 2 | Э | 2 |

| Fundamentals of Electrical<br>Technology               | 15ECE112 | 3.00 | 3.00 | 3.00 |      |      |      |      |      |      |      | 3.00 |
|--|----------|------|------|------|------|------|------|------|------|------|------|------|
| Fundamentals of Electrical and Electronics Engineering | 15EEE111 | 2.80 | 2.77 | 2.87 |      |      |      |      |      |      |      |      |
| Workshop B   | 15EEE180 | 2.76 | 2.76 | 2.76 |      |      |      |      | 2.76 | 2.76 | 2.76 | 2.76 |
| Communicative English I                                | 15ENG111 |      |      |      |      |      |      |      | 2.72 | 2.72 | 2.72 | 2.72 |
| Calculus, Matrix Algebra                               | 15MAT111 | 2.85 | 2.85 | 2.85 |      |      |      |      |      |      |      | 2.86 |
| Vector Calculus and Ordinary<br>Differential Equations | 15MAT121 | 3.00 | 2.99 | 3.00 |      |      |      |      |      |      |      | 2.99 |
| Engineering Drawing -CAD                               | 15MEC100 | 2.89 | 2.89 | 2.89 | 2.89 |      | 2.89 |      |      |      | 2.89 | 2.89 |
| Engineering Drawing-CAD-II                             | 15MEC101 | 2.97 | 2.97 | 2.97 | 2.97 |      | 2.97 |      |      |      | 2.97 | 2.97 |
| Engineering Mechanics                                  | 15MEC102 | 3.00 | 3.00 | 3.00 | 3.00 |      |      |      |      |      |      | 3.00 |
| Fundamentals of Mechanical<br>Engineering              | 15MEC111 | 2.92 | 2.89 | 2.91 | 2.94 |      | 3.00 | 2.90 |      |      |      | 2.90 |
| Workshop A   | 15MEC180 | 2.52 | 2.52 | 2.52 |      | 2.52 |      |      |      | 2.52 | 2.52 | 2.52 |
| Chemistry  | 15CHY100 | 2.89 | 2.89 | 2.87 | 2.87 |      |      |      |      |      |      |      |
| Chemistry Lab.   | 15CHY181 | 2.72 | 2.72 | 2.72 |      |      |      |      |      |      |      |      |
| Physics  | 15PHY100 | 2.70 | 2.70 |      |      |      |      |      |      |      |      | 2.70 |
| Physics Lab  | 15PHY181 | 2.99 | 2.99 | 2.99 | 2.99 | 2.99 | 2.99 |      |      |      |      |      |

Department of Civil Engineering, Amrita School of Engineering, Coimbatore

 Table B.8.5.1(d) PO-Attainment 2017-2018

| Course Title                                  | Course<br>Code | PO1  | PO2  | PO3  | PO4  | PO5  | PO6  | PO7  | PO8  | PO9  | PO10 | PO11 | PO12 |
|---|----------------|------|------|------|------|------|------|------|------|------|------|------|------|
| Introduction to Aerospace<br>Technology       | 15AES111       | 2.2  | 2.2  |      | 2.2  |      | 2.2  | 2.2  |      | 2.2  | 2.2  |      | 2.2  |
| Introduction to Chemical<br>Engineering       | 15CHE111       | 2.20 | 2.60 |      | 2.20 | 2.20 |      |      | 3.00 |      |      |      |      |
| Material Balances                             | 15CHE112       | 2.04 | 0.86 |      |      | 3.00 |      |      |      |      |      |      |      |
| Mechanics: Statics and<br>Dynamics            | 15CVL102       | 2.36 | 2.36 |      |      |      |      |      |      |      |      |      |      |
| Introduction to Civil<br>Engineering          | 15CVL111       | 2.6  |      |      |      |      | 2.6  | 2.6  |      | 2.6  |      |      |      |
| Engineering Graphics-CAD                      | 15CVL112       | 2.87 | 2.87 | 2.87 | 2.87 | 2.87 |      |      |      |      |      |      | 2.87 |
| Computational Thinking and<br>Problem Solving | 15CSE100       | 2.90 | 2.90 | 2.90 |      | 2.90 |      |      | 2.90 | 2.90 | 2.90 |      |      |
| Computer Programming                          | 15CSE102       | 2.41 | 2.29 | 2.37 |      |      |      |      |      |      |      |      |      |
| Computer Science Essentials                   | 15CSE111       | 2.75 | 2.72 | 2.72 |      |      |      |      |      |      |      |      |      |
| Computer Programming Lab                      | 15CSE180       | 2.44 | 2.42 | 2.44 |      | 2.54 |      |      |      |      |      |      |      |
| Cultural Education -1                         | 15CUL101       |      |      |      |      |      | 2.54 | 2.54 | 2.54 | 2.54 | 2.54 | 2.54 | 2.54 |
| Cultural Education-2                          | 15CUL111       |      |      |      |      |      | 2.47 | 2.47 | 2.47 | 2.47 | 2.47 | 2.47 | 2.47 |
| Solid State Devices                           | 15ECE111       | 2.05 | 2.05 |      |      |      |      |      |      |      |      |      | 2.05 |
| Fundamentals of Electrical<br>Technology      | 15ECE112       | 2.42 | 2.40 | 2.41 |      |      |      |      |      |      |      |      | 2.37 |

| 15EEE111 | 2.58   | 2.62  |  |  |  |  |                                |                                |                                |   |  |   |
|----------|--|---|--|--|--|--|--------------------------------|--------------------------------|--------------------------------|---|--|---|
| 15EEE180 | 2.36   | 2.36  | 2.36                                     |  |  |  |                                | 2.36                           | 2.36                           | 2.36  |  | 2.36  |
| 15ENG111 |  |   |  |  |  |  |                                | 2.76                           | 2.46                           | 2.83  |  | 2.70  |
| 15MAT111 | 2.80   | 2.80  | 2.80                                     |  |  |  |                                |                                |                                |   |  | 2.82  |
| 15MAT121 | 2.94   | 2.95  | 2.95                                     |  |  |  |                                |                                |                                |   |  | 2.94  |
| 15MEC100 | 2.86   | 2.86  | 2.86                                     | 2.86   |  | 2.86   |                                |                                |                                | 2.86  |  | 2.86  |
| 15MEC101 | 3.00   | 3.00  | 3.00                                     | 3.00   |  | 3.00   |                                |                                |                                | 3.00  |  | 3.00  |
| 15MEC102 | 3.00   | 3.00  | 3.00                                     | 3.00   |  |  |                                |                                |                                |   |  | 3.00  |
| 15MEC111 | 2.40   | 2.40  | 2.40                                     | 2.40   |  | 2.40   | 2.40                           |                                | 2.40                           |   |  | 2.40  |
| 15MEC180 | 2.91   | 2.91  | 2.91                                     |  | 2.91   |  |                                |                                | 2.91                           | 2.91  |  | 2.91  |
| 15CHY100 | 2.60   | 2.60  | 2.60                                     |  |  |  |                                |                                |                                |   |  |   |
| 15CHY181 | 2.75   | 2.75  | 2.75                                     |  |  |  |                                |                                |                                |   |  |   |
| 15PHY100 | 2.67   | 2.67  |  |  |  |  |                                |                                |                                |   |  | 2.67  |
| 15PHY181 | 2.97   | 2.97  | 2.97                                     | 2.97   | 2.97   | 2.97   |                                |                                |                                |   |  |   |
|          | 15EEE111<br>15EEE180<br>15ENG111<br>15MAT111<br>15MAT121<br>15MEC100<br>15MEC101<br>15MEC102<br>15MEC111<br>15MEC180<br>15CHY100<br>15CHY181<br>15PHY100<br>15PHY181 | 15EEE1112.5815EEE1802.3615ENG111115MAT1112.8015MAT1212.9415MEC1002.8615MEC1013.0015MEC1023.0015MEC1112.4015MEC1802.9115CHY1002.6015CHY1812.7515PHY1002.6715PHY1812.97 | 15EEE1112.582.6215EEE1802.362.3615ENG111 | 15EEE1112.582.6215EEE1802.362.362.3615ENG111 | 15EEE1112.582.6215EEE1802.362.362.3615ENG11115MAT1112.802.802.8015MAT1212.942.952.9515MEC1002.862.862.862.8615MEC1013.003.003.003.0015MEC1023.003.003.003.0015MEC1112.402.402.402.4015MEC1802.912.912.9115CHY1002.602.602.6015PHY1812.752.752.7515PHY1812.972.972.97 | 15EEE1112.582.6215EEE1802.362.362.362.3615ENG11115MAT1112.802.802.8015MAT1212.942.952.9515MEC1002.862.862.8615MEC1013.003.003.0015MEC1023.003.003.0015MEC1112.402.402.4015MEC1112.602.602.6015MEC1802.912.912.9115CHY1002.602.672.7515PHY1002.672.6715PHY1812.972.972.972.972.972.972.97 | 15EEE111       2.58       2.62 | 15EEE111       2.58       2.62 | 15EEE111       2.58       2.62 | 15EEE111       2.58       2.62       Image: style | 15EEE111       2.58       2.62 <td< td=""><td>15EEE111       2.58       2.62       Image: style style</td></td<> | 15EEE111       2.58       2.62       Image: style |

## **8.5.2.** Actions taken based on the results of evaluation of relevant POs and PSOs

(The attainment levels by direct (student performance) are to be presented through Program level Course-PO matrix as indicated)

## Table B.8.5.2 PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs

| PO-   | Target      | Attainment       |   |  |  |  |  |  |  |  |
|---|-------------|------------------|---|--|--|--|--|--|--|--|
| POS   | Level       | Level            | Observations  |  |  |  |  |  |  |  |
| PO1:Engineering Knowledge   |             |                  |   |  |  |  |  |  |  |  |
|   |             |                  | The target level was not attained by 15ASE111, 15MEC111,  |  |  |  |  |  |  |  |
| PO1   | 2           | 2.5              | and 15ECE111 and the action taken are for the above       |  |  |  |  |  |  |  |
|   |             |                  | mentioned courses for which the target was not met.       |  |  |  |  |  |  |  |
| Action 1:Include more examples involving applications of fundamentals in lectures.  |             |                  |   |  |  |  |  |  |  |  |
| Action 2: Practical applications of engineering drawing skills are incorporated in the next syllabus revision.                        |             |                  |   |  |  |  |  |  |  |  |
| Action 3: Focus to enhance student's skill in CAD software. Course content is oriented towards the same.                              |             |                  |   |  |  |  |  |  |  |  |
| Action 4: More focus on discussions related to approaching a problem, using foundational engineering knowledge for solving problem is |             |                  |   |  |  |  |  |  |  |  |
| included.   |             |                  |   |  |  |  |  |  |  |  |
| PO2:Problem Analysis  |             |                  |   |  |  |  |  |  |  |  |
|   |             |                  | The target level was not attained by 15ASE111, 15CVL102,  |  |  |  |  |  |  |  |
| PO2   | 2           | 2.5              | 15MEC111, and 15ECE111 and the action taken are for the   |  |  |  |  |  |  |  |
|   |             |                  | above mentioned courses for which the target was not met. |  |  |  |  |  |  |  |
| Action 1: Motivate the students to learn on their own   | and give p  | presentations in | class.  |  |  |  |  |  |  |  |
| Action 2: Scope of the course is widened to incorpor  | ate more fi | undamental top   | bics in the next syllabus revision.                       |  |  |  |  |  |  |  |
| Action 3: Course delivery to focus more on fundame  | ental conce | pts and usage o  | of the same to solve complex problems.                    |  |  |  |  |  |  |  |
| Action 4: Solving numerical problems as typical exa   | mples on a  | ll topics within | n the class room.   |  |  |  |  |  |  |  |

**PO3: Design/Development of Solutions** 

|  |  |                 | The target level was not attained by 15MEC111, and            |  |  |  |  |  |  |  |  |  |
|--|--|-----------------|---|--|--|--|--|--|--|--|--|--|
| PO3  | 2  | 2.6             | 15ECE111, and the action taken are for the above mentioned    |  |  |  |  |  |  |  |  |  |
|  |  |                 | courses for which the target was not met.                     |  |  |  |  |  |  |  |  |  |
| Action 1: Every lecture topic is accompanied by san    | nple codes   | for different p | roblem scenarios. The lectures also include code walk-through |  |  |  |  |  |  |  |  |  |
| which discusses more the problem solving aspect rat    | her than sy  | ntax.           |   |  |  |  |  |  |  |  |  |  |
| Action 2: The evaluation lab questions demand the s    | Action 2: The evaluation lab questions demand the students to code solutions for real-world problem scenarios. |                 |   |  |  |  |  |  |  |  |  |  |
| Action 3: In addition, the evaluation rubric places al | most equal   | weightage on    | the design of solutions in par with the implementation        |  |  |  |  |  |  |  |  |  |
| PO4: Conduct Investigations of complex problem         | IS   |                 |   |  |  |  |  |  |  |  |  |  |
|  |  |                 | The target level was not attained by 15MEC111, and            |  |  |  |  |  |  |  |  |  |
| PO4  | 2  | 2.1             | 15ECE111, and the action taken are for the above mentioned    |  |  |  |  |  |  |  |  |  |
|  |  |                 | courses for which the target was not met.                     |  |  |  |  |  |  |  |  |  |
| Action 1:The complex building drawings are separa      | ted by simp  | ole component   | s for better understanding.                                   |  |  |  |  |  |  |  |  |  |
| Action 2: More fundamental topics are included in th   | ne next sylla  | abus revision.  |   |  |  |  |  |  |  |  |  |  |
| Action 3: Course delivery to focus more on fundame     | ental conce  | pts and usage   | of the same to solve complex problems.                        |  |  |  |  |  |  |  |  |  |
| PO5 :Modern tools usage                                |  |                 |   |  |  |  |  |  |  |  |  |  |
| PO5  | 2  | 2.8             |   |  |  |  |  |  |  |  |  |  |
| Action 1:  |  |                 |   |  |  |  |  |  |  |  |  |  |
| Action N:  |  |                 |   |  |  |  |  |  |  |  |  |  |
| PO6 : Engineer and Society                             |  |                 |   |  |  |  |  |  |  |  |  |  |
|  |  |                 | The target level was not attained by 15MEC111, and            |  |  |  |  |  |  |  |  |  |
| PO6  | 2  | 2.3             | 15ECE111, and the action taken are for the above mentioned    |  |  |  |  |  |  |  |  |  |
|  |  |                 | courses for which the target was not met.                     |  |  |  |  |  |  |  |  |  |

Action 1:The practical project helps in motivating the students about the importance of civil engineering in community building. Action 2:Ought to connect the course content to the practical engineering design. Course delivery will be oriented towards the relevant practical applications of concepts.

Action 3: Ought to connect the course content to the practical engineering design. Course delivery will be oriented towards the relevant practical applications of concepts.

**PO7** :Environment and Sustainability

|  |              |                | The target level was not attained by 15ASE111 and 15ECE111,  |
|--|--------------|----------------|--|
| PO7  | 2            | 2.4            | and the action taken are for the above mentioned courses for |
|  |              |                | which the target was not met.                                |
| Action 1:Stress on the importance and need to create   | e sustainabl | le and green s | olutions in future in class lectures.                        |
| Action 2: The students are aware of the different bran | nches of civ | vil engineerin | g with their applications.                                   |
| Action 3: Presentations from students will be encour   | raged.       |                |  |
| PO8 :Ethics  |              |                |  |
| PO8  | 2            | 2.3            |  |
| Action 1:  |              |                |  |
| Action N:  |              |                |  |
| PO9 :Individual & Teamwork                             |              |                |  |
|  |              |                | The target level was not attained by 15MEC100 and            |
| PO9  | 2            | 2.5            | 15ECE111, and the action taken are for the above mentioned   |
|  |              |                | courses for which the target was not met.                    |
| Action 1:The relation between different branches of    | civil engin  | eering should  | be emphasized among the students.                            |
| Action 2:Students are encouraged to work out/ discu    | iss about re | al time proble | ems applying the fundamentals learned.                       |

**PO10**:Communication The target level was not attained by 15MEC100, 15MEC101 15MEC111, and 15ECE111, and the action taken are for the 2.4 **PO10** 2 above mentioned courses for which the target was not met. Action 1: Give more opportunities for the students to communicate in the form of class presentations and written reports and give feedback to them for improvement in these areas. Action 2: Will offer a session on line strokes that highlights the concept of depth of field in engineering drawing. **PO11 : Project management & Finance** PO11 2.5 2 Action 1: Action N: **PO12** :Lifelong learning The target level was not attained by 15ASE111, 15MEC111, and 15ECE111, and the action taken are for the above 2 **PO12** 2.5 mentioned courses for which the target was not met. Action 1: Course delivery to be oriented towards linking the fundamental concepts to practical usage. Action 2:Explain the relevance of the course in student's career and highlight each of its contents relevance in future. Action 3: The correlation of the learned principles with the application levels are elaborated to the students through simple examples.

| <b>CRITERION 9</b> | STUDENT SUPPORT SYSTEMS | 50 |
|--------------------|-------------------------|----|

## 9.1 Mentoring system to help at individual level

Amrita's approach to mentoring and counseling the students is guided by the vision of imparting a value based education to our students. The role of a dedicated and hardworking faculty body is vital towards achieving this objective. A balanced and effective mentoring is in place, maintaining a healthy relationship between faculty members and students. Mentoring and counseling are planned for the following aspects:

- Improve Academic performance.
- Develop a Research Orientation
- Guidance for Professional Career, Higher Studies & Skill Development
- Resolve Personal Issues: Behavioral; psychological
- Encourage Spirit of Innovation by motivating and training students to participate in Contests, Conferences, Projects and Internships
- Motivate to pursue Extra-curricular and Social activities
- Encourage students to participate in Cultural activities, Arts and Sports.
- Develop Personality and Character
- Foster Good Values, Healthy living and Discipline.

### **Student Portfolio**

The Student Portfolio with personal details along with their academic performance and progress is maintained as follows:

- Personal file: A detailed personal file is maintained in the School Administration Office, recording all relevant aspects of a student (Ref. B 9.1\*). This is supplemented by two automated software.
- Amrita University Management System (AUMS) Software: A master database holding all academic records (Ref. 9.2\*).
- Campus Management System (CMS): A database containing essential information, both academic (operational) and non-academic elements, required for effective mentoring and counseling of students at multiple levels. The information is stored as

Work Registers, Counseling Diaries, Achievements, and Disciplinary actions (Ref. B 9.3\*, 9.4\*, 9.5\* and 9.6\*).

## **The Mentoring Structure**

An effective student mentoring and counseling system has been implemented in the institution. The Department Chairperson assisted by Department Vice Chairperson(s) steer, direct and oversee this vital aspect:-

- Class Advisors: Class Advisors (CA) are appointed for every 20 students when the students join for the UG programme. Class Advisors so nominated hold the responsibility until the students complete the programme. The CAs will maintain all records of their respective wards assigned to them in the work register/ counseling diary in the CMS. They shall guide and counsel the students on maintaining good academic performance, attendance and discipline. They shall advise the students, monitor the courses undergone by them, monitor their performance in tests and also look into their personal difficulties. They guide students on internships and higher studies and facilitates the students wishing to pursue the various programmes offered by Amrita Centre for International Programmes (ACIP). Advisor also keeps track of Co-curricular, Extra Curricular achievements and Social activities. This will be frequently reviewed by the Department Chairperson. The CAs shall inform the parents regarding the academic progress and attendance percentages immediately after the periodical tests (Ref. B 9.7\*& 9.8\*).
- Class Committee: Class committee comprises the Chairperson, Class Advisor and student representatives. This committee is formed with the overall goal of improving the effectiveness of the teaching-learning process. In the two meetings held in a semester immediately after the periodical tests, feedback is taken from the student members representing the entire class, so as to improve the teaching-learning process and also to address other issues/grievances. The chairperson and advisor disseminate important activities in the department such as schedule of placement training classes, participation of students in extracurricular and co-curricular activities, conferences and workshops, internship opportunities, industry training and also inviting volunteers for any planned central activities. The other aspects that may be addressed during the Class Committee meeting are:

- Resolve any issues faced by students in the class room/ laboratories.
- Clarify Rules & Regulations of the degree program.
- Discuss the academic progress and the coverage of syllabus.
- Analysis of student performance.
- Identify slow learners, if any, and plan necessary support measures.
- Track attendance shortage and caution students lacking the requisite percentage
- Department AdvisoryCommittee: The Department Advisory Committee (DAC) formulates the vision, mission and PEOs of the Department. The Committee ensures collective responsibility of overall academic activities, programs, and performance of the department by taking measures to enhance quality of the teaching learning process. Committee will review the results of End Semester Examinations, frame strategies for enhancing staff development, teacher's attitude to students, etc.

Apart from the regular monitoring, the committee also assess the overall conduct of the different courses with respect to quality of the question paper, compliance to Bloom's Taxonomy Levels and CO attainment. The committee also assist the faculty whose student feedback rating is below 75%.

The minutes of meetings are circulated to all concerned for further action. The Office of Dean Engineering is kept informed of points deserving his attention.

## Academic Processes (Mentoring)

A systematic and structured orientation programme is conducted for the freshers, (both on academic and cultural aspects) as given below: -

• Orientation of Fresher's (Academic)

Amrita attracts UG students with varied academic (CBSE/ State Boards/ ICSE) and cultural backgrounds (from abroad as well). At the commencement of the academic programme, orientation training is imparted to freshers in two stages: -

- Stage1: A School level orientation is organized over one full day. Attendance by parents as well ensures clear understanding of both academic, and living environment (Ref. B 9. 9\*).
- Stage 2: Conducted at the department level.

## Programme Specific

- Weekly Counseling Sessions: Counseling sessions are scheduled in the time-table. The faculty mentors discuss issues related to academics and grades with the assigned students leading to improved academic achievement in both theory and lab subjects (Ref. B 9.10\*).
- Professional Orientation of 2<sup>nd</sup> Year Students: Conducted for 2<sup>nd</sup> Year students, so as to orient them professionally to the respective engineering discipline they have enrolled for.
- Choice of Electives: As the student progresses, guidance and mentoring is done on the choice of electives (Ref. B 9.11\*).
- Co-Curricular activities: Mentoring is provided to encourage students on all cocurricular activities, viz, participating in contests, conferences, publications etc.
- Mentoring for Higher Education: Students planning to pursue higher studies are constantly guided and mentored by the Dept.
- Support for Placements: Continuous support is rendered by the Dept. in tandem with the efforts of the Corporate and International Relations (CIR) to prepare students to achieve dream placements. During the beginning of final year, pre-placement training sessions are offered to the students. This will make the students more confident during the placement sessions.

## • Course Work Specific

- Tutorial Classes: Tutorial sessions are embedded into the curriculum, enabling a direct first level mentoring by respective teaching faculty.
- Class Committee/ Department Advisory Committee Meetings and Follow Up Mentoring Actions: Feedback is taken from the student representatives during the Class Committee meetings on the effectiveness of teaching. Based on this feedback, mentoring and counseling of faculty is done by the Department Chairperson/ Senior Professors. Student grievances are also addressed during the Department Advisory

Committee meetings. The information is escalated to Dean Engineering, if warranted, for further action.

 Student Mentors: Students are encouraged to contribute in the academic and personal growth of peers/ juniors by providing assistance as and when required.

## **Alumni Interaction**

Visiting alumni are a great source of inspiration to the student body. They interact with the students, share their experiences and guide them. This has benefitted especially, the motivated students who plan to pursue higher studies (both in India and abroad).

**Personal Issues- Counseling & Resolution of Personal Problems:** A healthy and peaceful state of mind goes a long way to enable students to concentrate in academics. Counseling students on personal issues is therefore vital, and hence has been incorporated into the system (Figure B9.1(a)). Categories of issues encountered are: interpersonal relationships, behavioral abnormalities, adjustment to the campus environment, emotional disturbances, family related problems etc.



Fig.B.9.1(a) The Counseling Work Flow

## The Counseling Structure

• **Department Faculty Counselors**: While the Class Advisors focus primarily on dealing with academic issues, a network of Department Faculty Counselors have been trained and nominated, to handle behavioral issues beyond the immediate scope of the Class Advisors. The staffing planned is as follows, based on the availability of trained faculty (Ref. B 9.12a\*):

- Major Departments 02
- Minor Departments 01
- Professional Counselors: Cases are escalated and referred to the professional counselors when such a necessity is felt by the Departments. They provide individual and group counselling to the students to help them maintain and improve their emotional, intellectual, physical and spiritual well-being through a process of self-discovery that promotes overall well-being. Two Professional Counsellors directly interact with students in need of personal counselling to alleviate stress and anxiety, achieve enhanced self-esteem, attain good inter-personal skills and ultimately help to achieve educational goals. Through the two-tier system of Class Advisors and Department Counsellors, a personal rapport is established with the individual students. Cordial relations are also developed with parents by interacting with them on need basis. For confidential help and exigencies, students are advised to directly contact the help line No.91-9487302905 or email to wecare@cb.amrita.edu (Ref. B 9.12b\*). A summary of counseling activities carried out by them is given at Ref. B 9.12c\*. They also carry out training of the Dept Counselors (Ref. B 9.12d\*)
- Chief Faculty Wardens (CFW) and Wardens of Hostels: The CFW and the network of wardens play a crucial role in identifying students needing counseling. All cases needing focused care and attention are referred to the Class Advisors/ Department Counselors

## The Work Flow of Counseling Process

- Level-1:( Respective Class Advisors / Teaching faculty/ Hostel Wardens). At the first level, behavioral issues noticed by a warden or a class handling faculty, if not addressed by them, are referred to the Class Advisor.
- Level-2: (Department Faculty Counselors / CFW).In case the issue is not resolved by the functionaries mentioned at Level-1, it is escalated.
- Level-3: Professional Counselors. The case is referred to the Professional Counselor, from any level, if warranted.

Wherever required, parents are also invited to render their support and cooperation for effective counseling of their wards. Cases needing psychiatric treatment are referred to premium

hospitals in the City. A strategy for counseling and monitoring students, generally followed by Depts are given at Ref. B 9.12e\*. Minutes of one Counselors Meeting of 27 Jun 2018 is given at Ref. B 9.12f\*. Follow up action is given at Ref.B 9.12g\*, Ref.B 9.12h\* and Ref. B 9.12i\*.

### **Student Support Extended for Value Based Education**

To follow up on the stated mission of the University, "to provide value-based education and mould the character of younger generation", varied multi-pronged steps have been initiated to by way of offering opportunities to students to learn by example. Towards this, a strong foundation is laid for holistic education through Live-in-Labs, Amrita Serve, Amala Bharatham, IAM meditation techniques, Amrita Yoga and Geetamritam (BhagavatGeeta camp) etc. A special programme is run for the freshers as Amrita Learning to Integrate Values and Excellence (ALIVE) projects in Care to Care, Combating Social evils, Organic Farming, AmalaBharatham (Swatchata drive), Amrita Quench (Conservation of water), Holistic Personality, etc. (Ref. B 9.13\*)

#### **Efficacy of Mentoring System:**

The mentoring-counseling system in place in the School of Engineering has reaped rich dividend in the following ways: -

- A gradual and systematic induction of the students assisted in effective transition to college life, reducing their sense of isolation and homesickness. This gave the students confidence to face the rigors of academics.
- The mentors provided impartial advice, individual and personal care and encouragement to the students all through their academic years. This created a positive work environment and developed a supportive relationship between students and staff. A mixture of harmonious and happy atmosphere prevalent in the campus enable the students to focus on academics and research.
- The placement statistics, success in GATE/ CAT exams, and admit to premier institutions in India and abroad are testimony to the efficacy of the mentoring and counseling procedure adopted to sustain the academic rigor.
- Enhanced the efficacy of the teaching learning process.

• Increased the comfort level of the students by progressing them through a systematic and structured path to their graduation.

#### 9.2 Feedback analysis and reward/ corrective measures taken, if any-

#### **Faculty Feedback analysis process**

Feedback is collected for all courses and 100% participation of the students is ensured. This is done by on-line teacher evaluation through AUMS. Ability of teaching and comprehensive ability of the teachers will be analysed. All the comments written by the students in feedback forms will be communicated to the respective faculty members along with their feedback levels to know their strengths and weaknesses and to enhance their teaching skills. The evaluation index of all teachers is obtained from the process and appreciations/corrections for individual staff member are given by the Chairperson.

Chairperson/Class advisors visit the classes shortly after the commencement of the semester where the students are given a platform to express their views regarding the subjects, faculty and any other issues they are facing. During this period the Advisor/Chairperson emphasize the importance of each subject, its applications and also about the other activities planning in the semester. According to the student feedback Chairperson will find a solution to their problems, if any, with the support of Class Advisors. This will ensure a smooth atmosphere for the students in the semester. The faculty in charge of each subject will start the classes with a introduction of the subject with an emphasis on prerequisite, if any, the syllabus, lecture plan, course outcome etc.

After the each periodical test a **class committee meeting** is convened in the presence of the Chairperson and the Class Advisor with the representatives of the class. In cases where the performance is very poor more student representatives will attend the meeting. The students' exam performance, their attendance status, class in general etc. is discussed during the meeting. Students are encouraged to present their view points with reference to each subjects. All these points are noted down by the Class Advisor and report to all the faculty. In case if the students find any subject very difficult it will be communicated to the concerned Chairperson.

#### Basis of reward / corrective measures, if any

Faculty members who get feedback below 75% are identified and are given special inputs by the Chairperson of the Department. This is also discussed during the Department Advisory Committee. Chairperson monitor the performance of such faculty with the support of students. Also the faculty members who get an average feedback of above 90% are appreciated at the department level staff meetings.

## 9.3. Feedback on facilities

In Amrita hostels, students get ample opportunity to interact with their peers and get enriched both academically and culturally. Utmost importance is given to inculcate values which will help the residents to live in harmony with their friends and equip them to develop an integrated personality which will go a long way in shaping their future. There are nine hostels in the campus. Details of facilities extended are enumerated in the Hostel Handbook (Ref. B 9.14a\*).

The feedback on central facilities is taken on a regular basis from the students, and is incorporated into the system of both academic and counseling structure. A survey taken from Final Year students is reported in Table B.9.3 (a) and feedback on Department facilities is reported in Table B.9.3 (b). The analysis of the report is given at Ref. B 9.14b\*.

|  | Feedback of Final Year Students (2015-2016 Batch) - Residents - Report |      |      |         |      |      |             |  |  |  |  |  |
|--|--|------|------|---------|------|------|-------------|--|--|--|--|--|
|  | Total Responses: 1113  |      |      |         |      |      |             |  |  |  |  |  |
| Measure of positivity = positive responses/negative responses = (Very Good + Good) / |  |      |      |         |      |      |             |  |  |  |  |  |
| (Very Bad + Bad)   |  |      |      |         |      |      |             |  |  |  |  |  |
| Sl   | Parameters   | Very | Good | Average | Poor | Very | Positivity  |  |  |  |  |  |
| no.  | i arameters  | Good | Good | mulage  | 1001 | Poor | 1 Ostervity |  |  |  |  |  |
| 1  | Waste Management System  | 334  | 515  | 186     | 30   | 49   | 10.7        |  |  |  |  |  |
| 2  | Drinking Water   | 294  | 531  | 200     | 40   | 49   | 9.2         |  |  |  |  |  |
| 3  | Dining Hall Capacity   | 240  | 582  | 194     | 40   | 58   | 8.3         |  |  |  |  |  |
| 1  | Hostel surroundings  | 304  | 521  | 188     | 40   | 52   | 8.0         |  |  |  |  |  |
| 4  | (Garden, Hygiene)  | 504  | 521  | 100     | 47   | 52   | 0.0         |  |  |  |  |  |
| 5  | Dining Hall Hygiene  | 245  | 534  | 228     | 40   | 67   | 7.2         |  |  |  |  |  |
| 6  | Visits By Resident Warden  | 248  | 529  | 222     | 45   | 70   | 6.7         |  |  |  |  |  |
| 7  | Mess Hall Infrastructure   | 207  | 518  | 264     | 57   | 68   | 5.8         |  |  |  |  |  |
| 8  | Room Furniture Adequacy  | 254  | 468  | 258     | 72   | 62   | 5.3         |  |  |  |  |  |
| 0  | Hostel Room/Corridor   | 258  | 471  | 245     | 60   | 71   | 5.2         |  |  |  |  |  |
|  | Hygiene  | 238  | 4/1  | 243     | 07   | /1   | 5.2         |  |  |  |  |  |
| 10   | Toilet Cleanliness   | 272  | 461  | 240     | 74   | 67   | 5.0         |  |  |  |  |  |
| 11   | Accessibility of staff   | 192  | 516  | 261     | 70   | 75   | 4.8         |  |  |  |  |  |
| 12   | Electrical Equipments  | 230  | 173  | 247     | 8/   | 71   | 15          |  |  |  |  |  |
| 12   | Availability   | 233  | 475  | 247     | 04   | /1   | 4.5         |  |  |  |  |  |

Table B.9.3 (a) Exit Feedback 2016-2017 batch

| 13 | Sports Facilities (Gym,<br>Outdoor, Indoor etc.)            | 207 | 471 | 275 | 85  | 76  | 4.2 |
|----|---|-----|-----|-----|-----|-----|-----|
| 14 | Laundry Facility  | 181 | 454 | 310 | 83  | 86  | 3.7 |
| 15 | Behavior Of Hostel Staff                                    | 209 | 470 | 246 | 86  | 103 | 3.6 |
| 16 | Reading Room Facilities<br>(News Papers, Magazines<br>etc.) | 176 | 402 | 345 | 111 | 80  | 3.0 |
| 17 | Food Serving Mechanism                                      | 160 | 414 | 306 | 103 | 131 | 2.4 |
| 18 | Attention On Problems                                       | 155 | 401 | 273 | 130 | 155 | 1.9 |
| 19 | Role Of Student<br>Representatives                          | 147 | 372 | 298 | 148 | 149 | 1.7 |
| 20 | Computerized Gate pass<br>Management System<br>(CMS)        | 177 | 388 | 222 | 117 | 210 | 1.7 |
| 21 | Recreational Facilities                                     | 156 | 279 | 340 | 197 | 142 | 1.2 |
| 22 | Quality of Food   | 110 | 239 | 304 | 173 | 288 | 0.8 |

Table B.9.3 (b) Feedback on Department Facilities

|           | Feedback from 2015-16 , 2016-17, 2017-18 & 2018-19 Batches - Report |              |      |         |      |              |  |  |  |  |  |  |
|-----------|---|--------------|------|---------|------|--------------|--|--|--|--|--|--|
| Sl<br>no. | Parameters  | Very<br>Good | Good | Average | Poor | Very<br>Poor |  |  |  |  |  |  |
| 1         | Environmental Engineering Lab                                       | 7            | 104  | 6       |      |              |  |  |  |  |  |  |
| 2         | Materials Testing Lab   | 3            | 140  | 27      | 3    |              |  |  |  |  |  |  |
| 3         | Survey Lab  | 5            | 145  | 19      | 2    |              |  |  |  |  |  |  |
| 4         | Construction Material Lab   | 1            | 150  | 19      | 2    |              |  |  |  |  |  |  |
| 5         | Hydraulic Engineering Lab   | 6            | 148  | 19      |      |              |  |  |  |  |  |  |
| 6         | Geotechnical Engineering Lab  | 4            | 105  | 15      |      |              |  |  |  |  |  |  |
| 7         | CAD LAB   | 10           | 151  | 5       |      |              |  |  |  |  |  |  |
| 8         | Class Room Facilities   |              | 149  | 59      | 9    |              |  |  |  |  |  |  |

## 9.4. Self-Learning

The curriculum offers courses like seminar on current technical topics and major projects, where topics are self selected based on the selection of the guide. Every student has to submit a home assignment based on topics beyond syllabus in all courses in all semesters. Well equipped Central Library and department library provides assistance for self learning. Students can access NPTEL video lectures for better understanding of the concepts. TEQIP- QEEE classes are also conducted. Civil Engineering Association and ICI student Chapter organizes activities such as workshop, seminar and group discussion etc in every semester. The students are also encouraged to participate in technical events/workshops conducted by other institutions/organizations which also will enhance their knowledge. Industrial visits are arranged to benefit the students to improve their practical exposure

## **Facilities to support Self learning**

- Computing Facility: The intranet site- intranet.amrita.edu hosts links to various IT enables services like Digital Library, Central Library book search etc. The campus is also part of the National Knowledge Network (NKN) of National Mission on Education through Information and Communication Technology (NMEICT) a project of Ministry of HRD.
- WiFi at Amrita: All hostels and academic blocks are covered by WiFi.
- Cisco Networking Academy: Established as one of Regional Academies by CISCO in India in 1998. It is a comprehensive e-learning program. The Academy is currently an Instructor Training Centre (ITC) and Academy Support Center(ASC). The Academy offers certificates like CCNA, CCNP and ITE.
- Clubs such as Aero SAE, SAE, Anantam, Shrishti, and respective Department Technical Clubs contribute and complement the self-learning process.
- Seminars and workshops are organized for the students to enhance their skill. Students are encouraged to attend/ participate in technical events conducted in premium institutions in the country.
- Students are encouraged to participate in various contests which will help them to learn new technologies.
- Visits are organized to select industries to provide exposure to students.
- Students are encouraged to take MOOC courses from platforms such as Coursera and NPTEL.
- Students participate in programming contests like TGMC (The Great Mind Challenge Contest conducted by IBM), ACM ICPC (programming contest conducted by ACM), and Aspirations (programming contest conducted by Infosys) etc. Participation in these contests provide insight into application development.
- Students take up competitive examinations like GATE and CAT.

## Academic Processes promoting Self Learning

- Certain topics of the syllabus (approximately 5%) of selected subjects are left for self study by the students and evaluated in the End semester examinations. This is seen to motivate students towards self-learning.
- The questions for the examinations ought not to have been discussed in the class.
   This encouraged students to explore reference books.
- The curriculum offers mini project in selected courses during the 2<sup>nd</sup>/ 3<sup>rd</sup> year, which motivates the student to explore problems and challenges beyond the prescribed study material.
- After their foray into mini projects in the junior classes, the students are exposed to
  project based courses, thereby encouraging independent thinking. The component
  of self-learning is evaluated in these courses. This experience is further enhanced
  during the Final Year student projects.
- Student are given assignments, (up to 5% weightage) beyond the scope of the syllabus to encourage to develop their self-learning capabilities.
- Encouragement is given for conduct of research oriented projects in the senior semesters. Students possessing a CGPA above 8.0, and aspiring for a Distinction grade, are required to have a publication in a Scopus Indexed journal.

## 9.5. Career Guidance, Training, Placement

### **Corporate and Industry Relations**

The Directorate of Corporate and Industrial Relation (CIR) is a unique setup, among the educational institutions in India, primarily for the career development of students. Its mission statement clearly set the direction and activities in this endeavour.

### **CIR's mission**

"To facilitate holistic career development of students through comprehensive and systematic training on Life Skills and build competence in core areas through innovative practical applications"

CIR's functions are organised under eight units namely, Career Counselling, Career Competency Development, Higher Learning Initiatives, Entrepreneurship Development, Corporate Relations, Placement, Marketing Communication, and Corporate Training. Each of these units works in collaboration with the other units of CIR and also with the various departments of the university. Each of these units has its team in all the campuses with the heads located in the Coimbatore campus.

CIR is well equipped with faculties, staff, infrastructure etc. for its effective functioning. The total strength of CIR stands at 92 with the breakup of 47 in Coimbatore, 23 in Amritapuri, 16 in Bangalore, 5 in Kochi and 1 in Mysore. It has its own independent offices in all the campuses. CIR's infrastructure facilities include Auditoriums, Conference Halls, Interview rooms and Class rooms. The Coimbatore CIR unit has a total floor area of 55,541 sq. ft.

### **Career Counselling**

In Career Counselling students' career aspirations are captured from an early stage, while they are in the campus for their UG or PG programs. Each student is provided with a Career Planning workbook, as early as third semester for B Tech, Arts and Sciences (ASAS) UG, and Integrated MSc/MA programs and first semester for M Tech and Management programs to systematically plan and execute their short-term and long-term goals. It starts with capturing the personal aspirations of students and culminating with goal setting and job acquisition. To guide students in this, each student is assigned to a mentor, who is a CIR faculty.

Career counselling is a process in which a counsellor and counselee(s) are in a dynamic and collaborative relationship, focused on identifying and acting on the counselee's goals, in which the counsellor employs a repertoire of diverse techniques and processes, to help bring about self-understanding, understanding of behavioural options available, and informed decision-making in the counselee, who has the responsibility for his or her own actions.

#### **Career counselling basically consists of four elements:**

## 1. Self-awareness

When individuals are considering career options, it is useful to assist them in attaining greater self-awareness by asking about their aspirations, interests, values, and skills in order that they might better understand which jobs are suited to them and which ones are not a good match.

#### 2. Job market information

Students get job market information primarily through CIR. The Placement unit of CIR has details like job profiles, recruitment process, remuneration etc. of multiple companies from the recruitment processes carried out during previous years. Students interact with the Placement unit and get the details of interest. They also get job details from the CIR faculty whom they interact with for career counseling. Students also get information on job market from social media, company websites, magazines, books and newspapers. They are encouraged to read newspapers to enrich their knowledge on job markets. They attend presentation and talks by companies, which is a good source for job market information.

#### 3. Decision-making/ setting goals

In making a decision about the kind of work to pursue, it is important to integrate selfawareness with job market information to arrive at the best fit for the person. It is often useful to engage in a discussion and weigh the pros and cons of the various choices. Setting both short term and long-term goals is also a useful activity for students to engage in.

#### 4. Job search

Individuals may need assistance with job search strategies such as writing a résumé and cover letter, mastering presentation skills, group discussion skills, interview skills etc.

The number of students undergone career counselling in the last four academic years are reported in Table B.9.5(a).

| Academic<br>Year | Description of counselling<br>Activities | Number of students benefited | Remarks                                   |  |
|------------------|--|------------------------------|---|--|
| 2014 - 15        | One to one counselling                   | 983                          | Personal File for each student            |  |
| 2015 - 16        | One to one counselling                   | 1141                         | Personal File for each student            |  |
| 2016 - 17        | Counselling for poor performers          | 151                          | Special training for weak students.       |  |
| 2017 - 18        | Career Planning Guide and counselling    | 1101                         | Career Planning Guide for<br>each student |  |

 Table B.9.5(a)
 Number of students undergone career counselling

### **Career Competency Development**

The Career Competency Development unit has the responsibility of building foundation in students for successful career and making them industry ready as they complete their studies at the institute. Towards this it conducts multiple activities and life skills training is primary among them. CIR is equipped with well qualified and experienced in-house faculties for this training. It researches into emerging industry scenarios and arranges training by industry experts and distinguished academicians in such areas. It conducts training in foreign languages, organizes coaching classes for competitive examinations like GRE, CAT, GATE etc. within the campus premises. It conducts mock interview for all the pre-final year students during their sixth semester. It conducts pre-placement training before the commencement of the placement season. It conducts company specific training ahead of the placement process by respective companies.

### Life Skills

Life skills defined as "abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life", include skills and knowledge related to problem solving, critical thinking, communication, interpersonal aspects and self-management. This skill set is one of the essential ingredients for career advancement irrespective of career lines.

The objective of life skills training is to enhance and sharpen the problem solving, communication and interpersonal skills of students. It is intended to support the academic curriculum to fully prepare the job aspirants to be industry ready. Life skills education aims to provide students with strategies to make healthy choices that contribute to a meaningful life. More specifically the following are achieved.

- Introduction to the concepts, development and enhancement of life skills to equip the students to be effective in her/his personal and professional life.
- Enablement for campus to corporate transition by helping students to understand and acquire the knowledge, skills and attitudes which are required for successful transition.

By the end of the life skills training, the student would have a clear life goal and the confidence and strategy to move towards the same. The achievement of this outcome will largely depend on the motivation level and intellectual commitment the student possesses.

Life skills is grouped under three broad categories namely Soft Skill, Verbal Skill and Aptitude Skill. A brief description of each of these is provided below:

### Soft Skill

Interpersonal skill plays a crucial role in the career and personal life of an individual. For example, the skill to effectively deal with the various stakeholders in a large program is very much required for the successful completion of that program. In the personal life too, effectively associating with the other members of the family is very crucial for successful personal life. Soft skill courses help the students to develop this skill set through continuous practice in activities like group discussion, presentation, role play etc.

#### Verbal Skill

The ability to communicate effectively with others is of greater importance to achieve personal and organizational goals. Learning to communicate better is a survival need in this era of technological advancements. Verbal skill courses provide students with ample learning opportunities to improve their ability to communicate effectively. It make them learners for life and also enable them to take up the verbal tests conducted by the recruiters with a lot of confidence.

### Aptitude Skill

Aptitude is the ability to learn or to develop proficiency in an area, if provided with appropriate education or training. Aptitude is a component of a competency to do a certain kind of work at a certain level. A test is a systematic procedure for comparing people's performance, knowledge, attitudes, skills, or competence. This course is intended to support students to become familiar and proficient with the latest trends in aptitude testing conducted by companies during their recruitment process.

## **Course Structure**

CIR conducts life skill courses for the undergraduate (UG) and postgraduate (PG) students as part of the academic program in the university. In B Tech the life skill courses are offered over a period of four semesters, while in M Tech the life skill courses are offered over a period of two semesters. In the case of all ASAS UG programs, the life skill courses are offered over a period of three semesters. In all the programs, the life skill courses are structured in such a way that all courses are completed by the end of pre final year before the commencement of the campus placement process. They are credit based courses in almost all the programs.

The number of students undergone career counselling in the last four academic years are reported in Table B.9.5(b) .

| Academic<br>Year | Course Name | Course code | Number of students<br>Benefited | Remarks   |  |  |
|------------------|-------------|-------------|---------------------------------|---|--|--|
| 2014 - 15        |             | SSK111      | 1151                            |   |  |  |
|                  | Life Skills | SSK112      | 1011                            | B Tech $3^{rd}$ , $4^{th}$ , $5^{th}$<br>and $6^{th}$ semesters                             |  |  |
|                  |             | SSK113      | 983                             |   |  |  |
|                  |             | SSK111      | 981                             |   |  |  |
| 2015 - 16        | Life Skills | SSK112      | 1140                            | B Tech 3 <sup>rd</sup> , 4 <sup>th</sup> , 5 <sup>th</sup><br>and 6 <sup>th</sup> semesters |  |  |
|                  |             | SSK113      | 1141                            |   |  |  |
| 2016 - 17        | Life Skills | 15SSK221    | 995                             | B Tech 3 <sup>rd</sup> 4 <sup>th</sup> 5 <sup>th</sup>                                      |  |  |
|                  |             | SSK112      | 988                             | and $6^{\text{th}}$ semesters   |  |  |
|                  |             | SSK113      | 982                             |   |  |  |
| 2017 - 18        | Life Skills | 15SSK221    | 1101                            | B Tech 3 <sup>rd</sup> , 4 <sup>th</sup> , 5 <sup>th</sup><br>and 6 <sup>th</sup> semesters |  |  |
|                  |             | 15SSK321    | 992                             |   |  |  |
|                  |             | 15SSK331    | 994                             |   |  |  |

Table B.9.5(b) Students undergone career counselling in the last four academic years.

## **Core Competency**

In core competency development, the focus is on engineering students. Developing core competency is challenging due to the multiplicity of the disciplines and the dynamic nature of the industry requirements. Our strategy here is to adopt a multi-pronged approach consisting of the following:

- Guest Lectures
- Certification Programs
- Technical Sessions
- Special Classes for Performing Students
- Industry Internship
- Industry Electives

#### **Guest Lectures**

CIR organizes guest lectures for the students and faculty in all the engineering disciplines. CIR through its industry contacts identifies experts in various fields of engineering and invites them to the university for interaction with the department faculty and addressing the students. In such programs the visiting experts present industry scenarios, industry problems, challenges and ways to overcome through actual examples from projects. This provides a great opportunity for the students to realistically expand their knowledge, clarify doubts and make plans for developing competency required by industry. This also helps the faculty to understand the industry scenarios and bring-in the industry outlook in their teaching. Guest Lectures are organized throughout the year covering all engineering disciplines.

The summary of the guest lectures organized during the last four academic years are presented in Table B.9.5(c).

| Academic<br>Year | No. of Guest Lectures conducted |     |     |     |     |     |     |     |       |  |
|------------------|---------------------------------|-----|-----|-----|-----|-----|-----|-----|-------|--|
|                  | AEE                             | CHE | CIE | CSE | ECE | EEE | EIE | MEE | Total |  |
| 2014 - 15        | 5                               | 4   | 4   | 5   | 5   | 4   | 4   | 5   | 36    |  |
| 2015 - 16        | 4                               | 4   | 5   | 4   | 4   | 4   | 3   | 7   | 35    |  |
| 2016 - 17        | 2                               | 3   | 5   | 7   | 5   | 6   | 3   | 9   | 40    |  |
| 2017 - 18        | 2                               | 4   | 2   | 4   | 4   | 4   | 4   | 2   | 26    |  |

Table B.9.5(c) Guest lectures organized during the last four academic years.

#### **Certification Programs**

CIR facilitates certifications in languages and industry-demand technologies. In the technology area, CIR through their research and with the inputs from industry, identifies certain certification programs. Subsequently through a registration process interested students are identified and CIR conducts training for these students. Through a series of tests, potential students who can clear the certification examination are identified and generally a good percentage of them get certified. CIR makes sure that the certification examinations are conducted by the respective agencies in the campus and well in time.

The summary of the certification programs conducted during the last four academic years are listed in Table B.9.5(d).

| Academic Year | Certification Program             | Category         | Number of<br>students<br>Attended |
|---------------|-----------------------------------|------------------|-----------------------------------|
| 2014 - 2015   | BEC                               | English Language | 5                                 |
| 2015 - 2016   | BEC                               | English Language | 4                                 |
| 2016 2015     | BEC                               | English Language | 17                                |
| 2016 - 2017   | NI – CLAD Certification           | Technology       | 15                                |
|               | BEC                               | English Language | 42                                |
| 2017 - 2018   | NI – CLAD Certification           | Technology       | 61                                |
|               | Autodesk – Revit<br>Certification | Technology       | 49                                |

Table B.9.5(d) Certification programs conducted during the last four academic years.

## **Technical Sessions**

CIR conducts technical sessions for the pre final year students of all engineering disciplines in both B Tech and M Tech streams. These are conducted during the sixth / second semester for the B Tech / M Tech students. During this period, CIR conducts classes in programming languages.

The summary of the technical sessions conducted during the last four academic years for the B. Tech. students are listed in Table B.9.5(e).

| Academic<br>Year | Number of Technical Sessions conducted for sixth semester students |     |     |     |     |     |     |     |  |
|------------------|--|-----|-----|-----|-----|-----|-----|-----|--|
|                  | AEE  | CHE | CIE | CSE | ECE | EEE | EIE | MEE |  |
| 2014 - 15        | 8  | 11  | 12  | 11  | 9   | 10  | 8   | 11  |  |
| 2015 - 16        | 13   | 12  | 11  | 13  | 12  | 13  | 14  | 12  |  |
| 2016 - 17        | 11   | 11  | 13  | 11  | 11  | 12  | 12  | 12  |  |
| 2017 - 18        | 9  | 10  | 11  | 11  | 12  | 11  | 9   | 14  |  |

Table B.9.5(e) Technical sessions conducted during the last four academic years
#### Special classes for top performing students

CIR also conducts special sessions for high profile students to prepare them for high profile jobs. Right now, such trainings are conducted for computer science students to build and enhance their skills in problem solving, which is sought by many of the top paying software companies. In this program, CIR organizes special sessions by distinguished academicians and continuous sessions by internal faculties from the department and CIR.

The summary of the special classes conducted during the last four academic years are listed in Table B.9.5(f).

| Academic<br>Year | Program  | Number<br>of hours<br>engaged | Number of<br>students<br>participated | External/Internal<br>trainer                                       |
|------------------|--|-------------------------------|---------------------------------------|--|
|                  | Problem Solving and<br>Coding Session                        | 30                            | 101                                   | Internal (Dr. Vidhya B /<br>Ardra P S)                             |
| 2015 - 16        | Interactive Sessions on<br>Problem Solving and<br>Algorithms | 12                            | 114                                   | External (Prof. Pandu<br>Rangan<br>Chandrasekharan,<br>IIT Madras) |
|                  | Problem Solving and<br>Coding Session                        | 12                            | 75                                    | Internal (Dr. Vidhya B /<br>Ardra P S)                             |
| 2016 - 17        | Interactive Sessions on<br>Problem Solving and<br>Algorithms | 12                            | 70                                    | External (Prof. Pandu<br>Rangan<br>Chandrasekharan,<br>IIT Madras) |
|                  | Problem Solving and<br>Coding Session                        | 25                            | 95                                    | Internal (Dr. Vidhya B /<br>Ardra P S)                             |
| 2017 - 18        | Interactive Sessions on<br>Problem Solving and<br>Algorithms | 12                            |                                       | External (Prof. Pandu<br>Rangan<br>Chandrasekharan,<br>IIT Madras) |

Table B.9.5(f) Special classes conducted during the last four academic years.

#### **Industry internship**

Industry training is an integral component for core competency building and students typically go for this training during the summer and winter vacations. There are three categories of training under this namely in-plant training, summer internship and internship as part of the employment offer.

In-plant training is done during the summer vacation following the end of second year and before beginning of third year. CIR supports students in this activity. Internship is organized during the summer vacation following the end of third year and before the beginning of the final year. Students apply for such internship programs with the selection based on academic records, tests, and interviews. Summer vacation internships are for a period of one to one and half months and most of the companies pay stipend during this training program. CIR supports students in this activity.

In internship as part of the placement offer organizations give training, want the students to do project over one or two semesters and evaluate them at the end of the training leading to confirmation of placement. These internships are paid and typically done over a period of one semester for B Tech students and two semesters for M Tech students. Students submit a report at the end of internship program and based on overall performance they are given full time employment.

The number of students got placement internships during the last four academic years are reported in Table B.9.5(g).

| Academic Year | No. of Interns |
|---------------|----------------|
| 2014 - 2015   | 117            |
| 2015 - 2016   | 138            |
| 2016 - 2017   | 184            |
| 2017 - 2018   | 187            |

Table B.9.5(g) Students got placement internships during the last four academic years.

#### **Foreign Languages**

CIR is very proactive when it comes to providing foreign language learning opportunities to students. It has been conducting foreign language classes in three important languages namely: German, Spanish, and French.

Since 2003, extra-curricular German language classes are offered to students and young staff-members at Amrita Vishwa Vidyapeetham, Coimbatore, by a German native teacher. The courses (mostly basic A1-level, sometimes also A2-level) last for two semesters and end with an examination through the Goethe-Institut, Chennai, and Coimbatore. Mostly the examiners come to the Coimbatore Campus to conduct the examination. Each academic year almost all students who had registered for the exam, had successfully completed with grades "very good", "good", or "satisfactory".

We have been conducting foreign language training and certification programs in Spanish and French too. The summary of the German, French and Spanish classes during the last four academic years are reported in Table B.9.5(h) .

 Table B.9.5(h) Summary of the German, French and Spanish classes during the last four academic years.

| Academic Year | Foreign<br>Language | Number of students<br>Attended |
|---------------|---------------------|--------------------------------|
| 2014 2015     | German              | 64                             |
| 2014 - 2015   | French              | 28                             |
| 2015 2016     | German              | 43                             |
| 2015 - 2016   | Spanish             | 52                             |
| 2016 2017     | German              | 70                             |
| 2016 - 2017   | Spanish             | 25                             |
| 2017 - 2018   | German              | 66                             |

#### **Higher Learning Initiatives**

CIR facilitates higher learning of students, who plan to pursue MBA, M Tech or MS programs in the country or abroad. A sizeable number of students pursuing the B Tech program in the university have plans to go for management education in well-known institutes in the country and abroad. This primarily requires a good score (percentile) in the qualification examination like CAT, GMAT etc. CIR identifies external institutes who conduct such training programs and selects the best through a process of evaluation, discussions and negotiations.

There are many students from the engineering discipline who have plan to pursue their MS programs in universities abroad or M Tech / ME programs within the country. The students who plan to do their MS in universities abroad, necessarily requires a good score / percentile in GRE and TOEFL for the US universities and IELTS and country specific examination for the European universities. CIR identifies external institute, who can provide such training and selects the best through evaluation, discussion and negotiation. For the benefit of students who plan to join Indian Public Sector Undertakings or go for engineering post graduate studies with in India, CIR brings in the best institute who can prepare them for GATE.

The selected institutes conduct the training classes in CIR premises during evening hours after the regular classes. These training classes are monitored for the quality of faculty, number of training hours and timing of the classes.

#### CAT

Amrita students are offered special training for CAT (Common Admission Test). Experts from external training institutes conduct training at CIR premises twice or thrice a week. Approximately 200 hours of rigorous training and several online mock tests containing different levels of questions make the students capable of scoring well in CAT. Scholarship is offered to select students based on the performance in the test conducted.

#### GRE

CIR facilitates training for GRE aspirants through well-established external institutes. Exhaustive classroom training of 90 hours include areas like quantitative aptitude, verbal aptitude and analytical reasoning, and analytical writing etc. They provide study materials as well as around 25 hours for previous year test paper discussion. Online mock tests are also conducted on a regular basis. The classes are conducted weekly twice or thrice in the evening at CIR premises

#### GATE

CIR organizes special training for GATE (Graduate Aptitude Test in Engineering) aspirants. Experts from external institutes come to Amrita and provide exclusive training for our students. 350-400 hours of rigorous training includes approximately 250 hours of classroom training on core engineering subjects, engineering mathematics and general aptitude and more than 100 hours of periodic tests. Online tests help the students to analyze their

performance and improve their test taking strategy. Students of small batches are formed according to their branch and classes are conducted separately during evening hours at CIR premises.

The summary of the competitive examination training during the last four academic years are listed in Table B.9.5(i).

| Academic Year | Competitive Exam<br>training | Number of students<br>attended |
|---------------|------------------------------|--------------------------------|
|               | GRE                          | 33                             |
| 2014 - 15     | CAT                          | 51                             |
|               | GATE                         | 57                             |
|               | GRE                          | 36                             |
| 2015 - 16     | CAT                          | 57                             |
|               | GATE                         | 59                             |
|               | GRE                          | 47                             |
| 2016 - 17     | CAT                          | 41                             |
|               | GATE                         | 53                             |
|               | GRE                          | 53                             |
| 2017 - 18     | САТ                          | 51                             |
|               | GATE                         | 41                             |

Table B.9.5(i) Competitive examination training during the last four academic years.

#### **Placement specific Interviews and Training**

#### **Mock Interviews**

CIR conducts mock interviews for all the pre final year B Tech students during the 6th semester. The mock interviews are conducted by a panel consisting of an industry expert and head of the UG team. Students are called as per a schedule and interviews are conducted and feedback is given. Table B.9.5(j) lists the mock interviews conducted during the last 4 academic years.

| Academic  | Students attended Mock Interview Branch wise |     |     |     |     |     |     |     |  |  |
|-----------|--|-----|-----|-----|-----|-----|-----|-----|--|--|
| Year      | AEE  | CHE | CIE | CSE | ECE | EEE | EIE | MEE |  |  |
| 2014 - 15 | 57   | 43  | 53  | 281 | 182 | 115 | 56  | 196 |  |  |
| 2015 - 16 | 69   | 60  | 67  | 351 | 199 | 129 | 61  | 207 |  |  |
| 2016 - 17 | 56   | 65  | 55  | 291 | 173 | 106 | 59  | 177 |  |  |
| 2017 - 18 | 48   | 60  | 63  | 284 | 182 | 108 | 64  | 185 |  |  |

Table B.9.5(j) Mock interviews conducted during the last 4 academic years.

**Pre Placement Training** 

CIR conducts pre-placement training for all branches of engineering during the summer vacation between pre-final year and final year with the focus on life skills and technical skills. The pre-placement training is full day program for two to three weeks and typically three hours per day is allotted for technical training. This training is provided to both B Tech and M Tech students. Technical trainings are conducted by CIR technical faculty, invited industry experts and department faculty.

The summary of the pre placement training during the last four academic years are reported in Table B.9.5(k).

Table B.9.5(k) Pre placement training during the last four academic years.

| Academic Year | Average Number of session taken<br>during Preplacement training |
|---------------|---|
| 2014 - 15     | 33  |
| 2015 - 16     | 33  |
| 2016 - 17     | 34  |
| 2017 - 18     | 47  |

#### **Company Specific Training**

In addition to the pre placement training, CIR conducts company specific training one or two days in advance of the placement process by respective companies. In these training an overview of the company, job profiles and previous years' questions are discussed.

The summary of the Company specific training during the last four academic years are reported in Table B.9.5(l).

| Academic Year | No. of Trainings |
|---------------|------------------|
| 2015 - 16     | 42               |
| 2016 - 17     | 38               |
| 2017 - 18     | 86               |

 Table B.9.5(l) Company specific training conducted during the last four academic years

#### **Special Training for Underperforming Students**

CIR conducts special sessions for students who are not able to secure a job during the June to Dec period of the recruitment process. The recruitment process generally starts in June and continues till June next year. Such students are identified and given supportive training in their weak areas. Generally, such trainings are in aptitude skill, verbal skill and technical subjects. These trainings are conducted during the winter vacation in between the 7<sup>th</sup> and 8<sup>th</sup> semesters. There are cases where students are given additional coaching, on one to one basis, to face technical and HR interviews.

#### **Corporate Relations**

The Corporate Relations unit is the primary nodal point for bringing industry to Amrita. It meets with industries across the country and abroad and presents Amrita's credentials and brings them to the university. It is instrumental in signing Memorandum of Understanding with industry for funded research projects, setting up labs, funded student projects, conducting workshops in emerging technologies, guest lectures, internships, in-plant trainings, faculty development programs etc. It helps to bring in industry experts as part of the committee for curriculum development.

#### It has the following objectives:

- Build and maintaining good rapport with various industries for the benefit of faculty and students.
- Sign Memoranda of Understanding with major companies, research agencies and institutions to provide opportunities for the faculty and students to work on latest technologies.
- Expose students and faculty to industry practices and developments in technology.

- Facilitate visits by senior industry leaders for interaction with faculty and students.
- Organize guest lectures, seminars and webinars conducted by industry for the benefit of students.
- Secure sponsorships from industry for technical events like conferences, seminars, symposia, workshops and student contests through strategic relationships.
- Setting up labs along with industry
- Mentoring for students by industry leaders for promoting entrepreneurship
- Seek the help of companies to spare working products / prototypes for academic demonstration purposes.
- Facilitate in-plant training, industry visits, summer and final semester internship for students across all disciplines and campuses.
- Undertake consultancy and sponsored research in consonance with the expertise available in the university.
- Promoting Management / Executive Development Programmes
- Soliciting support from reputed companies each year for the Corporate Action Plan with respect to engineering, management, biotechnology and other disciplines.
- Initiate appropriate measures to support Heads of Placement of Engineering, Management and other disciplines so as to improve the quality and range of placements that match the aspiration levels of students and enhance the image of the university.
- Representing / participating in events conducted by industry / other institutions

During the last four academic years it has signed MoUs with industries and the summary list is presented in Table B.9.5(m)

| Academic Year | No. of MOUs Signed / Renewed |
|---------------|------------------------------|
| 2014 - 15     | 18                           |
| 2015 - 16     | 9                            |
| 2016 - 17     | 6                            |
| 2017 - 18     | 14                           |

Table B.9.5(m) MoUs with industries during the last four academic years

#### **Industry Electives**

CIR facilitates to bring in top in demand industry topics, especially in emerging technologies, to the university curriculum to be offered as elective or core courses. This helps a lot in making the students more in line with the industry by the time they pass out of the university. This is done under the umbrella of the Memorandum of Understanding signed between the industry and the university. When a new course is suggested to be introduced by the industry, CIR gets the curricula reviewed by the department and works with the department in completing all the internal formalities in introducing the course as an elective or as a core. Subsequently the industry trains the faculty through multiple training sessions and the trained faculty in turn teach the students. This has got two benefits of faculty getting trained in latest technologies by industry who in turn teach a large number of students.

the summary of the industry electives during the last four academic years are reported in Table B.9.5(n).

| Academic<br>Year | Industry Elective<br>executed          | Course<br>Code | Department<br>which offered the<br>Electives | Number of<br>students<br>Completed the<br>course |
|------------------|--|----------------|--|--|
|                  | IT Essentials                          | CSE 380        | CSE  | 363  |
| 2014 - 15        | Business<br>Intelligence               | CSE 457        | CSE  | 198  |
| 2015 - 16        | IT Essentials                          | CSE 380        | CSE  | 223  |
|                  | Big Data<br>Analytics                  | CSE459         | CSE  | 162  |
|                  | IT Essentials                          | CSE 380        | CSE  | 324  |
| 2016 - 17        | 2016 - 17 Big Data<br>Analytics CSE459 | CSE            | 106  |  |
| 2017 - 18        | Foundations of IT                      | 15CSE377       | CSE  | 227  |
|                  | Big Data<br>Analytics                  | CSE459         | CSE  | 285  |

Table B.9.5(n) Industry electives during the last four academic years

#### Placement

The Placement unit does an important role and ensures that all eligible students are placed and continuously strives to raise the bar on the average salary and the highest salary year on year. Along with the Corporate Relations unit, it connects with industries across the country and arranges placement talks and conducts placement process. Year on year, it succeeds in increasing the number of industries visiting Amrita. It is our earnest endeavour to see that the students are placed in jobs as per their career aspiration. Major global corporations regularly visit Amrita to meet its talent requirements. At the end of each placement process, feedback is collected from the officials of the recruiting companies, which is a valuable input to bring in improvements in the career competency development programs.

The stages involved in the placement process is depicted in Fig. B 9.5 (a). It consists of 7 stages as described in the Figure.



Fig.B.9.5(a) Stages involved in the placement process

The summary of the placement statistics during the last 3 years is shown in Table B.9.5(o).

|                                | 2018 Batch        |        |        | 2017 Batch        |        | 2016 Batch |                   |        |        |
|--------------------------------|-------------------|--------|--------|-------------------|--------|------------|-------------------|--------|--------|
| B.Tech.                        | Regd.<br>Eligible | Placed | %      | Regd.<br>Eligible | Placed | %          | Regd.<br>Eligible | Placed | %      |
| CSE                            | 219               | 218    | 99.54  | 275               | 272    | 98.91      | 244               | 237    | 97.13  |
| ECE                            | 125               | 123    | 98.40  | 152               | 150    | 98.68      | 152               | 150    | 98.68  |
| EEE                            | 58                | 56     | 96.55  | 78                | 74     | 94.87      | 93                | 92     | 98.92  |
| EIE                            | 41                | 41     | 100.00 | 41                | 37     | 90.24      | 50                | 49     | 98.00  |
| Mech.                          | 82                | 80     | 97.56  | 147               | 131    | 89.12      | 163               | 159    | 97.55  |
| Chemical                       | 28                | 19     | 67.86  | 35                | 26     | 74.29      | 38                | 35     | 92.11  |
| Aerospace                      | 23                | 20     | 86.96  | 36                | 31     | 86.11      | 43                | 40     | 93.02  |
| Civil                          | 16                | 9      | 56.25  | 32                | 30     | 93.75      | 35                | 35     | 100.00 |
| Total                          | 592               | 566    | 95.61  | 796               | 751    | 94.35      | 818               | 797    | 97.43  |
| %                              |                   | 95.61  | l      |                   | 94.35  |            |                   | 97.43  |        |
| Average<br>Salary              | 4.8               |        | 4.5    |                   | 4.2    |            |                   |        |        |
| No. of<br>companies<br>visited | 108               |        |        | 98                |        |            | 89                |        |        |

Table B.9.5(o) Placement statistics during the last 3 years

#### 9.6. Entrepreneurship Cell

#### Amrita Centre for Entrepreneurship (ACE) - Expanding the Power of Choice

#### The Facility at ACE

ACE has its own separate mentoring desk, library, laboratory, and workshop facility. The mentoring in terms of career options and nurturing startup ideas is provided here. As students get a wide range of courses and programmes to choose from while entering the university, likewise they have a set of choices even before graduating successfully from Amrita. According to Prof. C. Parameswaran, Director - CIR, "The Directorate of Corporate & Industry Relations of the University facilitates students with three options – Placements, Higher Studies and Entrepreneurship". Thus, one of the options for students passing out of Amrita who have the urge to start something is to become an entrepreneur. To nurture the entrepreneurial spirit among youngsters who dare to innovate and initiate, Amrita Centre for Entrepreneurship (ACE) was established by CIR in June, 2011.

The ACE library has its own collection of books and other entrepreneurship-related materials.

There is a laboratory for students interested in building circuits. A workshop with facilities like lathe machine, drilling and welding equipment is also available.

#### Management of ACE:

ACE operates with the support of Director, CIR and his office. Effectively it is a twomember team comprising Mr. R. Krishnan (Head) and Mr. D. Sakthivel (Coordinator). Its activities include: -

- Managing ACE Membership
- Organising entrepreneurship-focused programmes (own as well as funded)
- Mentoring budding entrepreneurs
- Creating and nurturing the entrepreneurship ecosystem

ACE activities draw their direction from the objectives– creating a culture and an ecosystem for infusing entrepreneurial spirit. Its objectives include the following:

- Design, develop and execute high impact entrepreneurship programmes and create opportunities for Amrita students at local and national levels. The programmes would include talks, games and exercises, short courses, events, mentoring, incubation and networking.
- Form student clubs in each campus to promote entrepreneurship.
- Create a powerful 'ACE Community' by bringing in institutional members, hiring / seeking support from faculty, mentors and experts, besides identifying student leaders to form Entrepreneurship Clubs.
- Develop the capacity of ACE to run a mature set of entrepreneurship development programmes within 5 years. The capacity building services covering Consulting, Faculty Development, leadership development, Creation of a pool of volunteers to participate in ACE programmes and setting up E-Clubs.

In the words of Prof. C. Parameswaran, Director-CIR, "The ACE charter has as its aim to provide an eco-system that will kindle, nurture and support the innate desire and ideas lying dormant in the individual and create avenues to fructify those ideas into meaningful enterprises".

Thus, the ACE roadmap for entrepreneurship development, which has these stages:

The first stage has been to sensitize and promote entrepreneurship. This included entrepreneurship awareness campaigns using posters, membership drive through induction programmes, conducting seminars, workshops & interactive sessions, idea generation & business plan competitions and calling alumni entrepreneurs to ACE.

The second stage has been to create and foster entrepreneurship. This is done as follows:

- Hands-on work on innovative project ideas;
- Mentorship (by ACE, alumni, other entrepreneurs & CODISSIA);
- Entrepreneurship Awareness Camps (EAC) with EDI, through DST-NIMAT funding;
- EDP with EDI, through DST-NIMAT funding (for alumni in industry); and

• FDP with EDI, through DST-NIMAT funding (for alumni in academia).

The third stage is to nurture entrepreneurship. This is done by providing business incubation facility (like TBI, STEP) and arranging funds (linking corporate funding, investors, angel network, VCs).

The fourth stage is to recognize and celebrate entrepreneurship. This is done by rewarding entrepreneurs (alumni award) and obtaining sponsorship. The fifth stage is institutionalizing the movement. This happens through the introduction of courses in Entrepreneurship, publication of case studies, provision for incubating, VC funding, etc.

Based on the roadmap, ACE has been progressing in the following manner:

- Conducting programmes with funding from Department of Science & Technology (DST)'s NSTEDB, routed by Entrepreneurship Development Institute of India (EDII), Ahmedabad. On an average, one programme per year, of the following three types:
  - 3-day Entrepreneurship Awareness Camps (EACs)
  - o 2-week Faculty Development Programme (FDP) on Entrepreneurship
  - 1-month Entrepreneurship Development Programme (EDP)
- Mentoring inputs along with alumni & associations like CODISSIA, TiE, ICTACT, etc.
- Arranging for certificate courses with the help of external experts
- Conducting competitions Business Plans, Business Quiz, Best Technical Idea
- Expanding membership base and issuing E-Club membership cards
- Providing library, laboratory and workshop facilities for ACE members
- Organising talks, seminars, workshops etc. regularly and during tech-fest, Anokha
- Conducting club induction programmes for interested freshmen
- Identifying opportunities and working collaboratively with incubators for mature ideas requiring fund support

#### EFFECTIVENESS OF ACE IN ENHANCING ENTREPRENEURSHIP

ACE has achieved the following results till the end of December 2018:

- Obtained a funding of over Rs. 19 lakhs for promoting entrepreneurship
- Acquired a membership base of over 1000 students and alumni
- Successfully conducted 7 Entrepreneurship Awareness Camps (EACs)
- Effectively organized 4 Faculty Development Programmes (FDPs) on Entrepreneurship
- Smoothly executed 3 Entrepreneurship Development Programmes (EDPs)
- Has been regularly providing mentoring to budding entrepreneurs
- Constantly provided exposure and motivation to ACE members to follow their passion.

Some of the main reasons for success at ACE include:

- ACE began with 3-day EACs to gain confidence, competence and contacts in the entrepreneurship ecosystem. Once the network was established through the initial 3 years' activities, then moving on to conduct programmes of longer duration like FDP (2-weeks) and EDP (4 weeks).
- ACE has been taking the support of the Director who appreciates the importance of entrepreneurship and encourages students to take this route
- Some of the best entrepreneurs have been coming to ACE to inspire participants
- ACE regularly brings alumni entrepreneurs to the forum to get a better connect
- ACE organises industry visits in EACs for a lasting impact on budding entrepreneurs
- ACE does networking through membership bodies like ICTACT, TiE and CODISSIA
- ACE conducts competitions like the Product Design Award, with cash prizes

### SUCCESS STORIES FOR EACH OF THE ASSESSMENT YEARS TO BE MENTIONED (PERIOD 2014-2018)

#### 2014-15

#### **Success of ACE Members**

- 175 students registered for the Entrepreneurship Awareness Camp (EAC) with funding from NSTEDB, Department of Science & Technology (DST), Govt. of India, routed via EDI India, Ahmedabad.
- In a pilot Certification Programme on Breakthrough Innovation by University of California, Berkeley Extension and Intel partner, FICE, 25 March – 6 May, 2014, out of 27 participating teams from 21 colleges, the top 2 teams selected by Dr. John Danner and Dr. Mark Coopersmith in the Top 10, were from ACE, Amrita.
- Mr. Karthik Srinath, is an alumnus of Amrita Coimbatore, who completed his B.Tech.
   Mechanical Engineering, from the batch of 2011-2015. He had been an active member of ACE in the Quadra Cycle Project, where he gained the confidence to do everything. His impressive story is about how he gained in confidence and successfully overcame several challenges through grit and determination, coupled with hard work. Mr. Karthik is the founder of three firms, with a total project cost of the order of 3 crores.: (1) GREEN FIBERS, which is into coir fibre manufacturing, (2) GREEN PITH PRODUCTS, which is into coir pith block manufacturing, and (3) ANNAMALAI ORGANIC FOOD PRODUCTS, which is into oil manufacturing.
- Mr. N. Karthikkeyan, is another Amrita alumnus who completed his B.Tech. (Mechanical Engineering) from 2011 - 2015 batch, before enrolling for his MBA (Marketing) at PSG Institute of Management. He is the Founder of Scribble3D, which is into gifting, e-commerce and 3D Printing technology. He has also started Iyal Vanigam, which is into Organic Food retail. He has also partnered with Kodesam to provide a farm experience to students and corporates.
- Mr. Hari Nagendiran, who passed out of ASB in 2014, and the Managing Director of Chocolate Teddies, started promoting his company and taking it to the next level.

#### 2015-16

#### **Success of ACE Members**

- 80 students registered for the Entrepreneurship Awareness Camp (EAC) with funding from NSTEDB, Department of Science & Technology (DST), Govt. of India, routed via EDI India, Ahmedabad.
- All 16 participants who attended the FDP on Entrepreneurship, gave positive feedback.
- Out of 27 participants who attended the EDP under EDII-DST-NIMAT Project, 8 started their ventures successfully.

#### Success stories of EDP participants - Names & Ventures

**K. Vasantha Kokilam, Candlefire Development Academy**, 168, DPF Street, Lakshmi Mills, CBE

Subi Prabhakaran, Cake Dew, Puthuvalil House, Chathannoor, Kollam 691572 Kerala

**M S Sooraj Subramanian, Earlang Dreams**, 97, Chokalingam Pillai Street, Nataraja Nagar, Madurai

Hariharan S, Nuthukku Muttai, Sri Krishna College, Palakkad Main Rd.

Kuniamuthur, CBE

**R. Kumaresu, The Shake Studio**, Sri Krishna College, Palakkad Main Rd., Kuniamuthur, CBE

P.Amuthan, Amuthan Trading, 29A, Durai Samy Layout, Peelamedu, CBE

Alagappan Manickam, ALST & Co., Ranga Konar St, Anupperpalayam, Ram Nagar, CBE

**Anil Subahar, Shape recruiters,** No.19, Malaya St., Vasantham Nagar, Kovaipudur Pirivu, CBE

#### 2016-17

#### **Success of ACE Members**

 75 students registered for the Entrepreneurship Awareness Camp (EAC) with funding from NSTEDB, Department of Science & Technology (DST), Govt. of India, routed via EDI India, Ahmedabad.

- ACE Product Design Award Contest was conducted on 14th October, 2016 and the results were declared on 24th October, 2016 and the prize winners were awarded cash prizes as per the details given below:
  - 1st Prize : Ikram Shah V., S. P. Harish & Guru Prasath: Agriculture-related solution to clear wild plants grown in fields,
  - 2nd Prize : Anudeep K., Nandika V., Meghavarshini V., Ganesh V. & Abhijith
     Vivek: Making a cost effective and energy efficient solar cooker
  - 3rd Prize : P. Santhosh: Automation of water pump using Microcontroller: household & industrial use
- Four students from ECE Department of Amrita School of Engineering, three of whom were ACE members, had secured Runner-Up position in the Bosch Makeathon. The event had happened on 18th, 19th and 20th November, 2016 at Nasscom 10000 Startups, Bangalore. The team members are: Ikram Shah V, Karthikeyan S., Subhash Chandran S. and Adithya Bharadwaj U.
- All 20 participants who attended the FDP on Entrepreneurship, gave positive feedback.
- Out of 25 participants who attended the EDP under EDII-DST-NIMAT Project, 7 started their ventures successfully.

#### Success stories of EDP participants - Names & Ventures

**Mr. Prasanna Balaji, Coral Textiles**, 293/1A, Mullai Nagar, Iduvampalayam road, Periyandipalayam, Tirupur

Mr. Sushil Sivanesh E, Impresso Gifts as a new venture under Impresso 3D, MIG B 190, Brindhavan Nagar 3rd Cross, SITRA, Coimbatore, Poonga Nagar, Civil Aerodrome Post, Peelamedu, CBE

**Mr. Surya Narayanan.P, Sportico** 40 Sakthi Green Land, Thiruvalluvar Street, Vellakinar Pirivu, GN Mills (PO), CBE

**Mr. Sathish Kumar.P, SKV Paper Product**, Lalitha ammal Thottam, Vellamadai PO, Kalipalayam, CBE

Mr. Rajan R, Chellam Canteen, 126, ponnaiya Raja puram 4th street, CBE

Mr. K.S. Mohan Kumar, Latlon Technologies Pvt. Ltd, Kathir IT Park, Neelambur, CBE

Mr. M. Thirunavukrasu, Agri fly, Iswaraya Apartment, Veeranam Road,

Kelampakkam, Chennai

#### 2017-18

#### **Success of ACE Members**

- 82 students registered for the Entrepreneurship Awareness Camp (EAC) with funding from NSTEDB, Department of Science & Technology (DST), Govt. of India, routed via EDI India, Ahmedabad.
- Abhijeet Singh, CEO, BookBecho.com, won the award for Best Business Idea and also for bagged the Second Prize as Student Innovator in the Regional Startup Activation Program (RSAP 2017) conducted by Forge Accelerator along with Entrepreneurship Development & Innovation Institute - Tamil Nadu (EDII-TN). S. Karthikeyan's startup idea was selected in the top 24 and also announced as a special mention by RSAP. The students were felicitated on 26 April, 2017.
- ACE member, Ms. VamaniePerumal, was awarded the Suyasakthi Viruthugal, Homepreneur Awards – category of Education and Literature, the one of a kind initiative by Brand Avatar to acknowledge women entrepreneurs who make societal impact. The event was telecasted on News 7 Tamil channel on Independence Day 2017.
- ACE members, Ikram Shah and Vamanie Perumal were successful in making it to the NEXT 12 'Ideas WORTH PROTOTYPING' selected by EDII-TN & FORGE. They were awarded a cash prize of Rs. 25,000 each as a recognition of their efforts and to help them meet the expenses of furthering the outcomes in creating prototypes for their solutions. The jury hunted down Top 18 Ideas from among the 700 innovative ideas provided by the students of Tamil Nadu. After subsequent rounds of mentoring, screening, and competitive selection, the Top 36 ideas were shortlisted for the 3-day residential Boot Camp at FORGE.FACTORY. After rigorous process of selection the Top 18 ideas pitched to a jury of top experts, investors, and entrepreneurs on the Demo Day (4th day) organised on the 3rd December, 2017.
- In the Innovative Project Contest 2K18, organized for generating novel productdevelopment / service-related ideas through student presentations made at two-levels. Totally 18 teams (20 Projects) applied in the first level presentation on 16th March, 2018. Top three projects were selected based on uniqueness of the project, technical details, market potential & profitability, fund position and timeline & resources to build and demonstrate a working model. The 3 winning projects were:

- o 1st Prize (Rs. 5000/-): Reclined Electric Berth by Anumantharaja V & Team
- 2nd Prize (Rs. 3000/-): Beans Dehuller Machine by Shivaguru Prakash G & Team
- 3rd Prize (Rs. 2000/-): Solar Desalination by Akhilesh Ravindran & Team The other 6 teams at 2nd level received consolation prizes (Rs. 500/= each)
- All 21 participants who attended the FDP on Entrepreneurship, gave positive feedback.
- Out of 26 participants who attended the EDP under EDII-DST-NIMAT Project, 9 started their ventures successfully.

#### Success stories of EDP participants - Names & Ventures

**Dr. Indumathy R., RGPAL GLOBAL**, 65, Thaneer thotti Veedi, Mugasimangalam,

Alandurai Post, CBE

Mr. Amarnath B., SPETIX ENTERPRISES AND SERVICE PVT LTD,

Kadavnthra, Kochi

**Mr. Siva Kumar. M, Cyber Star Exports and Imports,** VJ Nagar 2nd Street, Kottaipalayam, CBE

**Mr. Vignesh M.. Sri Vignesh Enterprises**, 3/160,Kaveri Tank Street, Theethipalayam, CBE

Mr. Menon Vishnu Janardhan, Garpenter, Avinashi, CBE

Mr. Satheeshkumar S., Satheesh Industrials, 14/18b-1, P.N. Lay Out, Vedapatti, CBE

Mr. C M Sathyaprakash, Yakshini Eco Garments, 302,D Block, Tulips

Apartment, Nava India Signal, CBE

**Mr. Vignesh Prasanna, The Rapidgo Logistics**, 1/447 H.5, Near Neelambur Tollgate, Chinniampalayam, CBE

Mr. Harsha Mukund Soundararajan, Microskin India Pvt Ltd, Kk Pudur, CBE

#### **OVERALL, 2014-18**

- EACs: 661 participants have benefited from 7 EACs. More and more students are now aware of and exercising their choice of the third option entrepreneurship.
- FDPs: 57 participants have so far benefitted from the 4 FDPs organized under the EDI-DST-NIMAT scheme. Several participating colleges like JCT College of Engineering, Sankara College of Science & Commerce, Sri Krishna College, IIVM, Annapoorna Engineering College and Selvam Engineering College, have started conducting their own programmes through EDI-DST-NIMAT funding based on our inputs, contacts and guidance.
- EDPs: 78 participants have benefitted from the 3 EDPs conducted by ACE so far. This includes some student alumni as well. About 30% (24 numbers) of the EDP participants have started their ventures after successfully attending our programme.

#### 9.7 Co-curricular and Extra-curricular Activities

Students are engaged in co-curricular and extra-curricular activities and field trips through student chapters and forums, which provide opportunities for students to explore new fields of interest, cultivate leadership skills, and learn teamwork. While the co-curricular activities are held under the aegis of the respective departments, the extra-curricular activities and sports are organized by the Office of Students Welfare and Department of Sports respectively. Every department has its own association through which various department symposia, workshops and other technical and non-technical events are conducted. Students are encouraged to compete in state and national level sports and cultural competitions. Several festivals and events are organized drawing inspiration from our rich Indian culture. A Talent Search Program is organized for the freshmen (Ref. B 9.15a\*). An annual cultural festival Amritotsavam is organized to showcase the talents of students (Ref. B 9.15b\*). Several music and dance programs are organized by inviting renowned artists through SPIC MACAY. Student representatives are elected for conduct of the cultural and sports activities. All the students of ASE are divided into four Houses in order to promote healthy competitions in Sports and Cultural events. Student Secretaries/ Jt. Secretaries and Captains / Vice Captains (for cultural events and sports respectively) are elected for each House every year through a democratic process (Ref. B 9.15 c\* and 9.15d\*).

#### 9.7.1 College Techfest (ANOKHA)

ANOKHA is the national engineering tech fest of Amrita School of Engineering, Coimbatore India. Having successfully completed eight editions, ANOKHA has had an average annual participation of over 10,000 students from top-ranking engineering institutions in India like IITs, BITS, NITs and IIITs participating as well as partner universities in USA and Europe like University of New Mexico, EVRY France and Uppsala University-Sweden. It has a prize-money of Rs. 15 lakhs with 100+ plus highly competitive contests in all disciplines of engineering, sciences, robotics, gaming, business incubation, social media & entrepreneurship, cubing and short-film making. Taking up themes of global importance and societal relevance like Innovation, sustainable development, green trends, Technopolis - smart city and national security, it witnesses 30+ workshops in various cutting-edge areas of various engineering disciplines, robotics, business, sciences & humanities, start-up pitchfest and finance including its own edition of TEDx-like distinguished talk series called "Lumiere"( Ref. B 9.15e\*, 9.15f\* and 9.15g\*).

The workshops have been offered by leading companies such as Amazon, Microsoft, Mathworks, Cisco, Intel, National Instruments and Robert Bosch. Other highlights of the techfest include fascinating exhibitions & Autoshows, Meet the CEO programme, school outreach and product design, development & demonstration. Anokha provides the students an invaluable chance to discover, develop and demonstrate their talent, to excel and provides an innovative podium to stand on and succeed. This student-driven techfest showcases and celebrates the innovation, ingenuity, teamwork and talent of engineering students of AMRITA.Some of the world renowned artists who have been part of the entertainment spectacle include Percussionist, Sivamani; playback singers, Vijay Prakash, Karthik, Benny Dayal, Haricharan, Rahul Nambiar, Alaap Raju, Shaktisree Gopalan, Sunitha Sarathy, Ranjani-Gayatri and Nikita Gandhi.

Conduct of a techfest of this magnitude and proportions, for the students and by the students, develops organizational and leadership skills; enlarges their vision; exposes them to new technologies and innovation; facilitates and offers a platform for interaction with leading tech companies; and lastly this association among peer groups from across the length and breadth of the country promotes a sense of national integration.

#### 9.7.2 Extra-Curricular Activities – Sports

Amrita School of Engineering encourages the students to be healthy in body and mind. Sports provide an excellent opportunity for students to interact with each other, develop true sportsman spirit and team spirit, as well as to stay healthy. The Students of Amrita School of Engineering are divided into four teams viz Amritamayi, Anandamayi, Chinmayi and Jyothirmayi. The Students participate in clean and fair voting to select their Captains and Vice Captains. The Intramural Events are conducted during the Annual Sports Meet. Staff Tournaments are also conducted in certain games / event every year in both sections. Our students regularly participate in South Zone / All India Inter University Competitions and National Level Inter Collegiate Tournaments.

#### Infrastructure(Ref. B 16a\*):

Outdoor Games:

| 1). Basketball (M & W) | 2). Ball Badminton (M&W) |
|------------------------|--------------------------|
| 3). Cricket (M)        | 4). Football (M)         |
| 5). Kabaddi (M)        | 6). Tennis (M & W)       |
| 7). Volleyball (M & W) | 8). Tenni-Koit (W)       |
| 9). Swimming (M & W)   | 10). Hockey (M)          |
| 11). Handball (M)      | 12). Throw ball (W)      |
| 13). Athletics (M & W) | 14). Frisbee (MW)        |

Indoor Games:

| 1). Carrom (M&W)            | 2). Chess (M&W)        |
|-----------------------------|------------------------|
| 3). Shuttle Badminton (M&W) | 4). Table Tennis (M&W) |
| 5). Weight Lifting (M)      | 6). Power Lifting (M)  |

- Gymnasium: There are three gymnasiums in the Campus with the following equipment:
- Cardio Equipment:
  - 1) Up Ride Bicycle (Viva fitness)

- 2) Elliptical Cross Trainer (Motus & Viva Fitness)
- 3) Imported Motorized Treadmill (Motus 900)
- Strength Equipment:6 in 1 Multi Gym, 12 in 1 Multi Gym, 8 Station Multi Gym, 10in-1 Personal Gym, Twister, Cable Cross Over, Hacks Squat, Smith Machine, Calf Rise, Inner & Outer Thigh, Nelco Weight Lifting Set, Benches (Incline, Decline, Flat and Multi Purpose), T-Bar Rower, Preach Curl Stand, Dumbbells (with Rubber Rings and with groove), Barbell Plates, Barbell Rods Set (4 Different Size) and Rod Racks.

**Student Activities- Sports:** Students are participating every year in various tournaments such as (Ref. B 9.16 b\*):

- Coimbatore District Level Association Tournaments
- National / International Tournaments organized by other Universities
- Inter Collegiate Tournaments conducted by some other colleges
- Inter Campus Tournaments of our own five campuses.
- Inter University Tournaments-All India / South Zone Level

#### **Programmes Conducted:**

- Talent Search for Freshers,
- Intramural Competitions for all students
- Annual sports day for every academic year
- Inter-Campus Tournament in Selected Disciplines
- Summer and Winter Coaching Camps in Swimming.
- Friendly Matches in Intra and Inter Departmental Level
- Amrita Super League (ASL)-Staff & Students Combined Sevens Football Tournament. (viii). Amrita Premier League (APL) - Intra Campus Level T20 Tournament.
- Organizing South Zone Inter University Tournaments in selected Games.

#### **State of the Art Facilities:**

• Swimming Pool: Amrita Swimming Pool is of Olympic Standard with 50m X 25m in Size and contains 2.4 million litres of water. A Toddlers Pool is to accommodate babies and for

the professionals to have Warm-Up. State-of art machinery purifies 2.4 million liters of water with in six hours. It is one of the few international standard swimming pools wherein the State, National and International Swimming Competitions can be conducted.

- Synthetic Tennis Court:
  - Arogya Sadanam (New Gym): A multi purpose Indoor Gymnasium with a size of 8200sq feet consists of 4 Shuttle Synthetic Badminton Courts, 2500 Sq Feet of Gym Centre and playing provision for Table Tennis, CaromBoards and Chess.
  - Work In Progress: A Standard Basketball Court near Vasishta Bhavanam, and Specialized
     3 Concrete & 2 Mud Cricket Pitches.
  - Aagneya Sports Club: Sports Club Aagneya plays a vital role in conducting various Sports Events at Intra Campus Level Open Tournaments such as Campus Marathon, Amrita Badminton League, Amrita Basketball League, Amrita Volleyball League, Amrita Table Tennis League, etc. Student Officer Bearers organize the events. It gives a platform to bring out the sporting talent from a larger group.

Students winning laurels in South Zone/ National level sports are awarded grace marks

(Ref. B 9.16 c\*)

#### 9.7.3 Extra-Curricular Activities –Student Clubs

16 student-managed Clubs are active in the campus (Table B.9.7.4). The dedicated Student Counsellors encourage students in participating in the various extra curricular activities. Students are encouraged to join at least one of the following Student Forums to fine tune their innate raw talents to ultimately compete in various competitions held at National and South East Asian Levels. It is ensured that the quality and content of the programs organized by these forums are in tune with the Norms of the Association of Indian Universities.

| S.No | Name of the Club       |
|------|------------------------|
| 1    | Amrita Talkies         |
| 2    | Asthra - Science Club  |
| 3    | Kalakriti- Arts Club   |
| 4    | Nādam                  |
| 5    | Nature Club            |
| 6    | Natyasudha –Dance Club |
| 7    | NSS                    |

**Table B.9.7.4** Cultural Forums and Social Clubs (Ref. B 9.17a\*)

| 8  | Photography Club                       |
|----|--|
| 9  | Team Media                             |
| 10 | Ragasudha                              |
| 11 | Sahaya Club                            |
| 12 | Srishti Club MUN. Toast Masters        |
| 13 | Aagneya - Sports Club                  |
| 14 | Vision – Eye Donation Motivation Forum |
| 15 | Wellness Club                          |
| 16 | SPIC MACAY                             |

- Events Conducted by student Clubs- Given at Ref.B 9.17 b\*
  - Participation in Association of Indian Universities (AIU) Ref.B 9.17 c\*
- NSS Activities 2017-2018: The summary of NSS activities carried out by the students of Amrita is given below: -

| Year        | Activity   |
|-------------|--|
| 11 Mar 2017 | Lake Cleaning Drive- Selva Chinithamani Kulam Lake   |
| 28 Mar 2017 | Blood Donation Camp  |
| 13 Oct 2017 | Safe Diwali – Say NO to crackers   |
| 14 Oct 2017 | Tree Plantation Drive - Campus   |
| 15 Oct 2017 | NSS volunteers of Unit 1 paid a visit to Mother Theresa Old<br>age home at Puliayakulam, Ramanathapuram Coimbatore |
| 18 Jan 2018 | Health Awareness Programms – NSS & GEM Hospital  |
| 21 Jan 2018 | Lake Cleaning Drive -Kumarasamy lake- Muthannankulam   |
| 24 Jan 2018 | National Youth Day Celebrations  |
| 24 Jan 2018 | The Aswin Maharaj Foundation music therapy for cancer patient  |
| 15 Feb 2018 | Blood Donation Camp  |
| 15 Aug 2018 | Cleaning of 3km stretch of road - part of the Swachata<br>Pakhwada   |

#### • Conduct of Festivals& Cultural Events

Various Festivals and events are organized in the campus to promote harmony and awareness on the Indian Culture. Celebrations are organized on the occasion of Gurupoornima, Navarathri, Ugadi, Pongal, Onam, Ganesh Chaturthi, Gokulashtami, National Nutrition Week, International Yoga Day, and Amma's Birthday.

- Talent Search: It is a vibrant and extensive program, spanning over several weeks, organized to identify the freshmen having raw talents in dramatics, skits, quiz, dance, music, debate, literature, sports and games etc. The freshmen participate enthusiastically in large numbers and exhibit their talents.
- Amritotsavam: It is the mega annual cultural festival, spreading over a couple of weeks, with a large participation of students and staff. Cultural events, quiz, debates, songs, dances, essay competitions etc are organized completely by the students who invariably enrich their leadership qualities and team spirit.
- Gokulashtami: The birthday celebrations of Sri Krishna are conducted with a lot of pomp and splendor. The campus takes on a festive look and the students, faculty and non-teaching staff show extraordinary zeal and commitment in organizing various vibrant cultural programs. A grand procession with floats depicting various significant episodes in the life of Sri Krishna is a major attraction. Students are exposed to fabrication work, group performances and organizing skills.
- Amma's Birthday: Our Chancellor's Birthday is celebrated on 27th of September every year at Amritapuri. A large number of dignitaries along with thousands of devotees from all walks of life belonging to various countries gather to get the blessings of Amma. Our students and faculty members render voluntary services. Students develop project management and leadership skills while actively participating in organizing such a mammoth event.

# ADDITIONAL INFORMATION RELATED TO STUDENT SUPPORT SYSTEM (9.8 TO 9.10)

**9.8 Student Support Committees:** The following Committees are in place to support the students and also to ensure and promote discipline in the campus (Ref.B 9.18\*):

- A general Disciplinary Committee Chairperson and 15 members
- Anti-Ragging Committee- Chairperson and 7 members
- Women's Complaints and Redressal Cell Chairperson and 3 members
- SC/ST Complaints & Redressal Cell Chairperson and 4 members

• Emergency Response Team – 11 members

**9.9 Insurance Plans for Students:** Our Institution is providing different kinds of insurance plans for our students to attain the maximum benefits at the time of unpredictable events.

- Amartya Siksha Yojana- (Students Education Protection Policy): This policy provides protection for the education of the students in case of the occurrence of any unforeseen events to the insured parent /guardian such as, Accidental death /permanent total disability due to accident/ death during surgical operation or death within seven days thereafter whilst in the hospital. In the event of such death, the entire educational expenses of the student concerned will be met by the insurance company till his / her completion of the course in this institution.
- **Special Contingency Insurance Coverage:** This policy covers the reimbursement of Medical expenses incurred by the students due to accident occurred while the students are commuting to college / inside the campus / participation in authorized tours, excursions etc. Accidental claims shall be made up to 2 Lakhs per year.
- **Sampoorna Suraksha:** Life Insurance coverage to the students are active till their completion of their studies in our Institution. Upon the happening of death of the insured (due to any cause), 3 Lakhs is payable to their nominee.

#### 9.10 Amritanidhi Scholarships (Ref.B 9.19\*)

Scholarship is awarded as fee waiver for first year, based on the rank scored in the All India Amrita Entrance Examination. A candidate has to score a minimum CGPA without any arrear at any point of time as per the University rules, in order to earn the fee waiver in the subsequent years. Scholarship amount is reimbursed in September after the l

admissions. Scholarship will be withdrawn if the student gets involved in any disciplinary action during his / her period of study in the university. Scholarship is renewed on request in subsequent years on consistent academic performance by securing CGPA scores as given below: -

#### For 2016 & 2017 batch students

8.0 and above in the case of award of 90% scholarship.

7.5 and above in the case of award of 50% scholarship.

7 and above in the case of award of 25% scholarship.

#### For 2018 batch students

8.0 and above in the case of award of 90% scholarship.

7.5 and above in the case of award of 75% scholarship.

7 and above in the case of award of 50% scholarship.

In respect of the previous batches, scholarship amount of Rs50,000/- per annum was given and the students are eligible if they have secured a CGPA more than 6, without possessing any arrears. The status of disbursal of scholarship for the past three years is as follows:

| Table <b>B.9.10</b> (a) | Amritanidhi Scho | larships - Academi | ic Year - 2016-17 |
|-------------------------|------------------|--------------------|-------------------|
|-------------------------|------------------|--------------------|-------------------|

| DEPT     | 2013-IVyr       | 2014-III Yr     | 2015-II Yr      | 20  | 16 – I | Dept wise |       |
|----------|-----------------|-----------------|-----------------|-----|--------|-----------|-------|
|          | <b>Rs.50000</b> | <b>Rs.50000</b> | <b>Rs.50000</b> | 90% | 50%    | 25%       | Total |
| AE       | 4               | 4               | 3               | 1   | 1      | 0         | 13    |
| CIVIL    | 5               | 3               | 3               | 0   | 0      | 0         | 11    |
| CSE      | 14              | 10              | 11              | 18  | 25     | 31        | 109   |
| CHEMICAL | 7               | 5               | 3               | 0   | 0      | 0         | 15    |
| ECE      | 6               | 10              | 10              | 2   | 9      | 2         | 39    |
| EIE      | 4               | 4               | 0               | 0   | 0      | 0         | 8     |
| EEE      | 7               | 3               | 6               | 0   | 0      | 0         | 16    |
| MECH     | 3               | 4               | 3               | 2   | 4      | 10        | 26    |
| TOTAL    | 50              | 43              | 39              | 23  | 39     | 43        | 237   |

| DEPT     | 2014<br>- IVyr  | 2015 -<br>III Yr | 2016 –II Yr |     |     | 20  | 17—I | Dept wise |       |
|----------|-----------------|------------------|-------------|-----|-----|-----|------|-----------|-------|
|          | <b>Rs.50000</b> | <b>Rs.50000</b>  | 90%         | 50% | 25% | 90% | 50%  | 25%       | total |
| AE       | 4               | 3                | 1           | 0   | 0   | 0   | 2    | 2         | 12    |
| CHEMICAL | 3               | 3                | 0           | 0   | 1   | 0   | 0    | 0         | 7     |
| CIVIL    | 5               | 2                | 0           | 0   | 1   | 0   | 0    | 0         | 8     |
| CSE      | 10              | 10               | 13          | 30  | 25  | 15  | 22   | 23        | 148   |
| ECE      | 10              | 10               | 3           | 1   | 7   | 4   | 7    | 6         | 48    |
| EIE      | 3               | 0                | 0           | 0   | 0   | 0   | 0    | 0         | 3     |
| EEE      | 4               | 6                | 0           | 0   | 0   | 0   | 1    | 2         | 13    |
| MECH     | 4               | 3                | 3           | 8   | 5   | 3   | 8    | 7         | 41    |
| TOTAL    | 43              | 37               | 20          | 39  | 39  | 22  | 40   | 40        | 280   |

Table B.9.10(b) Amritanidhi Scholarships - Academic Year - 2017-18

Table B.9.10(c)Amritanidhi Scholarships - Academic Year - 2018-19

| DEPT     | 2015-<br>IVyr | 2016-III Yr |     | 2017 –II Yr |     |     | 2018 -I Yr |     |     | Dept wise |       |
|----------|---------------|-------------|-----|-------------|-----|-----|------------|-----|-----|-----------|-------|
|          | Rs.50000      | 90%         | 50% | 25%         | 90% | 50% | 25%        | 90% | 50% | 75%       | Total |
| AE       | 3             | 1           | 0   | 0           | 0   | 2   | 2          | 2   | 4   | 2         | 16    |
| CIVIL    | 1             | 0           | 0   | 1           | 0   | 0   | 0          | 0   | 2   | 0         | 4     |
| CSE      | 10            | 13          | 29  | 25          | 12  | 15  | 18         | 44  | 55  | 38        | 259   |
| CHEMICAL | 2             | 0           | 0   | 1           | 0   | 0   | 0          | 0   | 0   | 0         | 3     |
| ECE      | 10            | 3           | 0   | 6           | 1   | 3   | 6          | 4   | 23  | 7         | 63    |
| EIE      | 0             | 0           | 0   | 0           | 0   | 0   | 0          | 0   | 0   | 0         | 0     |
| EEE      | 4             | 0           | 0   | 0           | 0   | 0   | 2          | 1   | 0   | 3         | 10    |
| MECH     | 2             | 2           | 7   | 5           | 3   | 5   | 6          | 0   | 14  | 4         | 48    |
| TOTAL    | 32            | 19          | 36  | 38          | 16  | 25  | 34         | 51  | 98  | 54        | 403   |

\*Note: All References (B.9.1 to B.9.19) for criterion 9 have not been included in the SAR report and will be available in the institute during inspection.

## **CRITERION 10**

## Financial Resources

Governance, institutional Support and

#### **10.1. Organization, Governance and Transparency**

Amrita Vishwa Vidyapeetham is a multi-campus, multi-disciplinary research academia that is accredited 'A' by NAAC and is ranked as one of the best research institutions in India. The Chancellor of the University, Mata Amritanandamayi Devi, is a world renowned Humanitarian and Spiritual leader who strives to bring peace and prosperity to the entire world. Under the guidance of the Chancellor, Amrita has consistently been ranked in the top 10 Universities in India and was ranked 8<sup>th</sup> in the Universities category by the National Institutional Raking Framework (NIRF) in 2018 and 2019. Amrita Vishwa Vidyapeetham continuously collaborates with top US Universities including Ivy league universities and top European universities for regular student exchange programs, and has emerged as one of the fastest growing institutions of higher education in India. The School of Engineering is equipped with best-in-class infrastructure and highly qualified faculty.

#### 10.1.1. State the Vision and Mission of the Institute

Vision:

To be a global leader in the delivery of engineering education, transforming individuals to become creative, innovative, and socially responsible contributors in their professions.

Mission:

- To provide best-in-class infrastructure and resources to achieve excellence in technical education,
- To promote knowledge development in thematic research areas that have a positive impact on society, both nationally and globally,
- To design and maintain the highest quality education through active engagement with all stakeholders students, faculty, industry, alumni and reputed academic institutions,

- To contribute to the quality enhancement of the local and global education ecosystem,
- To promote a culture of collaboration that allows creativity, innovation, and entrepreneurship to flourish, and
- To practice and promote high standards of professional ethics, transparency, and accountability

# **10.1.2.** Availability of the Institutional Strategic Plan and Its Effective Implementation and Monitoring

Quality and commitment have been the corner stones for the success of Amrita. Being a multi-campus, multi-disciplinary university, decentralized administration was essential to maintain agility and quality. The concept of process and process owners facilitated decentralization of activities and delegation of authority, while maintaining accountability. After being awarded the "Deemed to be University" status in 2003, Amrita's recognition can be attributed to the key five strategic pillars:

- Inter-disciplinary
- Innovation
- International
- Industry
- India



Building on these strategic pillars is absolutely critical for Amrita to be recognized as a world class university

a. Inter-disciplinary:

Offer degree programs that are inter-disciplinary/intra-disciplinary in nature. The degree programs are designed to fit with the thematic research areas of the school.

Initiate and secure funds for inter-disciplinary projects from Govt agencies and industry

Four new programs that are intra/inter-disciplinary in nature will be introduced from AY 2019-20. Five more programs involving automation & rural technology, cyber physical system security and forensics, data analytics and medical systems, vision based systems for smart transportation and bioinformatics will be introduced between calendar year 2021-2026.

b. Innovation:

Innovative teaching-learning process: Strengthening the curriculum and introducing pedagogical changes that would trigger better knowledge gain. Introduction of modular mathematics courses was implemented in 2015. It is planned to further modularize the mathematics courses during the 2019 curriculum revision.

Introduce flexible curriculum with open electives across all engineering departments. The 2019 curriculum aims at being flexible and learner centric.

Carry out innovative research that can result in patents and entrepreneurship. A 20% increase in patent filing was observed from 2015-19 relative to 2010-15. The goal is to be able to file at least three patents a year from the School of Engineering.

c. International:

Currently, more than 140 MoU's have been signed with foreign universities which allow student exchange programs, dual degree programs, internships and projects. The strategic plan calls for at least an additional 100 MoU's with universities ranked in the top 500 of the world ranking.

Goal is to increase the number of collaborations with reputed foreign universities by 50% in the next 5 years.

d. Industry:

Amrita's engagement with industry is critical to ensure that (a) the curriculum and pedagogy matches with the needs of the industry; (b) to ensure that the research problems chosen are industry relevant problems and (c) industry gets a chance to assess the calibre and quality of Amrita. Goal is to increase the industry consultancy amount by 50% relative to 2018 funding amount.

e. India:

The founding trust of Amrita has adopted 103 villages across India. Experiential learning (named as Live-in-Labs), introduced in 2015, is part of the curriculum. Primary goal is to ensure that the society benefits from all the research work done at Amrita.

Monitoring the execution of the strategic plan is handled by the Board of Management, which is the Apex body of Amrita.

10.1.3. Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment and promotional policies

Other academic and research progress are handled by various committees comprising of administrators, chairpersons, professors and faculty members of the departments. The following committees are in place to provide directions, make decisions, implement and monitor progress of various functions.

1. The Board of Management consists of the following members:

| • | Swami Amritaswarupananda Puri             | President |
|---|---|-----------|
| • | Swami Ramakrishnanada Puri                | Member    |
| • | Br. Abhayamrita Chaitanya, Pro-Chancellor | Member    |
| • | Dr. P. Venkat Rangan, Vice Chancellor     | Member    |
| • | Dr. Prem Nair, Dean – Faculty of Medicine | Member    |

| ٠ | Dr. Bipin Nair, Dean – Faculty of Sciences                 | Member     |    |  |
|---|--|------------|----|--|
| ٠ | Dr. Shanti Nair, Dean, Research     Memb                   |            |    |  |
| ٠ | Dr. U. Krishnakumar, Dean - Faculty of Arts, Media & Comme | erce Membe | 21 |  |
| • | Dr. K. Sankaran, Registrar                                 | Member     |    |  |
|   |  | Secretary  |    |  |

Board of Management (BoM) consists of 9 members and conforms to guidelines set by regulatory bodies, and includes; three humanitarian leaders who are also authors of several scholarly books, one institutional leader, four eminent scientists, one eminent doctor.

BoM meets at least twice a year to both review past progress and approve future plans. BoM handles the following important aspects:

- I. To establish campuses, schools, centers and departments with adequate investment in infrastructure and quality of faculty
- II. To maintain a highly professional ambience and environment for faculty, students and staff to succeed and to redress grievances
- III. To confer, grant or award Degrees, Diplomas, Certificates and other academic titles and distinctions
- IV. To maintain proper accounts and other relevant records
- V. To ratify all appointments of Faculty and Staff

#### 2. Academic Council

List of Members:

- 1. Br. Abhayamrita Chaitanya (Pro-Chancellor)
- 2. Dr. P. Venkat Rangan (Vice Chancellor) Chairman
- 3. Dr. K. Sankaran (Registrar)
- 4. Dr. Prem Nair (Dean Faculty of Medicine)
- 5. Prof. C. Parameswaran (Director, Corporate & Industry Relations)
- 6. Dr. Bipin Nair (Dean Faculty of Sciences)
- 7. Dr. Shanti Nair (Dean Research)
- 8. Dr. Sasangan Ramanathan (Dean Faculty of Engineering)
- 9. Dr. V.S. Somanath (Dean Faculty of Business)
- 10. Dr. Krishnashree Achuthan (Dean, PGP Programmes)
- 11. Dr. Maneesh Sudheer (Dean International Programmes)
- 12. Dr. Balakrishnan Shankar (Associate Dean, Amritapuri Campus)
- 13. Dr. R. Dhandapani (Controller of Examinations)
- 14. Br. (Dr.) Sankara Chaitanya (Director, School of Ayurveda)
- 15. Br. Sudeep (Director, Amritapuri Campus)
- 16. Br. Dhanraj (Director, Bangalore Campus)
- 17. Dr. U. Krishnakumar (Dean Faculty of Arts, Media & Commerce)
- 18. Br. Sunil Dharmapal (Director, Mysuru Campus)
- 19. Dr. C. R. Muthukrishnan (Former Dy. Director, IITM External Member)
- 20. Dr. V. Radhakrishnan (Former Prof., IITM External Member)
- 21. Dr. A. H. Kalro (Former Director, IIMK External member)
- 22. Dr. Bharat Jayaraman (Professor, SUNY Buffalo External Member)
- 23. Dr. Jyothi S. N (Principal, School of Engineering, Amritapuri Campus)
- 24. Dr. S. G. Rakesh (Associate Dean, Bangalore Campus)
- 25. Dr. Vishal Marwaha (Principal, School of Medicine)
- 26. Dr. Balagopal Varma R (Principal, School of Dentistry)
- 27. Prof. K. T. Moly (Principal, College of Nursing)
- 28. Dr. M. Sabitha (Principal, School of Pharmacy)
- 29. Dr. Vasudevan Nampoothri (Principal, School of Ayurveda)
- 30. Prof.C Vidya Pai (Principal, School of Arts & Science, Mysuru)
- 31. Dr. M. Savitha Pande (Principal, School of Education)
- 32. Dr. Nandakumaran V. M. (Principal, School of Arts & Science, Amritapuri Campus)
- 33. Dr. Sriram Devanathan (Prof. Dept. of Chemical Engineering, Coimbatore)
- 34. Dr. Raghuraman (Chairman, School of Business, Coimbatore)
- 35. Prof. Sunanda Muralidharan (Chairperson, Dept. of Management, Kochi)
- 36. Prof. Manoj P (Chairperson, Dept of Management, Bangalore)

The Academic Council meets at least twice a year to deliberate on the following functions:

- To prescribe and ratify courses of study leading to degrees and diplomas
- To take periodical review of the activities of the Schools/Departments/Centres and to take appropriate action with a view to maintaining standards of instruction
- To devise measures for improvement of standards of teaching, research and training

- To frame policies with regard to admissions
- To ensure fair conduct of examinations
- To award fellowships and studentships, free-ships, concessions, travel fellowships, scholarships, medals, prizes etc.
- To put in place guidelines for attendance and discipline
- 3. Executive Committee

List of Members: Dr. S Mahadevan (Dy. Dean) – Chairman Mr. N Ravindran (GM Purchasing) Br. Harikumar (Manager, Finance) Frequency of Meeting: Once a week

- 4. Research Committees also called Thrust Area Groups
  - The quality of research is handled at the department level by thrust area groups.
  - Chairperson oversees the progress of research.
- 5. Internal Quality Assurance Cell (IQAC)

The IQAC is the quality monitoring cell with members from all departments, centers and administrative offices. There a total of 60 members.

IQAC aims to develop a system for conscious, consistent and catalytic action to improve the academic and administrative performance of the institution. IQAC evolves mechanisms and procedures for ensuring timely, efficient and progressive performance of academic, administrative and financial tasks, optimization and integration of modern methods of teaching, learning and evaluation and ensuring the adequacy, maintenance and functioning of the support structure. Some of the functions of the IQAC are:

- Development and application of quality benchmarks/parameters for the various academic and administrative activities of the institution.
- Dissemination of information on the various quality parameters of higher education.

- Organisation of workshops, seminars on quality related themes and promotion of quality circles.
- Documentation of the various programmes/activities leading to quality improvement.
- Preparation of the Annual Quality Assurance Report (AQAR) to be submitted to NAAC based on the quality parameters.

Frequency of meeting is at least twice a year.

### 6. Library Committee

Dr. M Sethumadhavan (Head, Center for TIFAC-CORE in Cybersecurity) – Chairman
Dr. K M Mini (Chairperson, Dept. of Civil Engineering)
Mr. M Sreevalsan (Head, ICTS)
Dr. K. I. Ramachandran (Prof, Center for Computational Engineering and Networking)
Frequency of Meeting: At least twice a year

# 7. Council of Wardens

Prof S . Ranganathan - Chairman

Mr. C. Arun Kumar (Dept of Computer Science & Engg) – Vice Chairman &

faculty warden

Dr. Saravanan (Dept of Mech Engg)

Mr. P. Gopakumar (Manager, ICTS)

Mr. Adarsh S (Dept. of Electronics and Communication Engg)

Dr. K Bagavinar (Dept of Physical Education)

Mr. Vijay Narayanan (Office of Dean Engg)

Ms. R. Aarthi (Dept. of Computer Science & Engg)

Dr. P. R. Janci Rani (Asst. Prof, Office of Student Welfare

Frequency of Meeting: Once a month

### 8. Tech Fest Committee

A total of 20 faculty mentors from various departments Total of 150 students Frequency of meeting: As and when needed

### 9. Sports Committee

Dr. O J Kumaresan - Chairman

Members are inducted from various departments depending on the nature of event being conducted

Frequency: As and when required

10. Cultural Committee

Dr. Shailendra K (Prof. Office of Student Welfare) – Chairman

Members are inducted from various departments depending on the nature of event being conducted

Frequency: As and when required

### 11. Purchase Committee

Each department has its own purchase committee. Purchase committee can consist of anywhere between 3-5 faculty members.

Frequency of meeting: On an as needed basis

Organization Structure (key functions shown) of the School of Engineering, Coimbatore



#### **Recruitment Policy**

#### **Procedure for non-tenure appointments**

All non-tenure Faculty appointments (Assistant Professors) as well as non-teaching appointments are done at School level by a committee consisting of Head of School, HR Head, Chairperson of the Department/Center and Senior faculty. In this aspect, there is a significant decentralization and empowerment of heads of schools in selection.

#### **Faculty Recruiting & Promotions Committee**

All tenure appointments i.e. associate professor and professor are evaluated and ratified by the faculty recruiting & promotions committees that include Deans of Faculties, Director, Human Resources, Chairperson of the department and senior professors. These appointments are based on peer review, presentation by faculty and interview. There is a conscious effort made by this committee to recruit talent from top institutes in India and abroad leveraging on the linkages facilitated by Amrita Centre for International Programs (ACIP).

#### Service rules

Service rules are framed by Board of Management of Amrita Vishwa Vidyapeetham so as to be in conformity with UGC regulations as well as best practices followed in internationally well reputed Universities. These rules broadly fall under the following aspects:

Teaching and instructional duties: Direct teaching to students includes scheduled classroom teaching of theory, laboratory sessions, and regularly scheduled project group meetings at bachelor's and master's levels. Indirect teaching includes mentoring sessions, research guidance to students, seminars, journal clubs, Ph.D. advising, etc. Mandatory minimum teaching (based on UGC rules) for all Amrita Faculty are set as 16 hours of direct teaching (classroom and laboratory, UG and PG) to students. In addition, there are indirect teaching hours, teaching preparation work hours, research work hours, all of which together should add up to a full working week. Any reduction

from the above required hours of direct teaching can only be in lieu of following university approved duties:

- Departmental duties (2 hours per week only at the associate professor and professor levels)
- Sponsored Research Project responsibilities (up to 4 hours per week)
- Industrial consulting and management development programs (up to 4 hours per week)
- Clinical services (for clinical faculty)
- Senior administrative roles as assigned/appointed by the University

All faculty must attempt to use latest teaching methodologies, including ICT based methods, and provide access to such ICT rich learning material to students.

• Research duties: Research duties include publishing of research papers, patent filing, consultancy, securing funded extramural grants and organizing of international conferences. The mandatory research paper requirements are as follows:

Each department is mandated to organize one international conference every two years. While organizing such conferences University will give infrastructure support but the organizing faculty in the department is responsible to apply and secure adequate extra mural funding to cover travel and lodging of international delegates.

- Administrative duties: Faculty are expected to serve on departmental, school-level, campus-level and university-wide committees such as admissions, sports, cultural, techfest, discipline, anti-ragging cell, hostel etc.
- Societal & Community engagement: In alignment with the university's ethos and vision of the Chancellor AMMA, faculty are expected to actively contribute in various societal and community engagement initiatives such as Live-in-Labs, Swachh Bharat (Amala Bharatham), Village adoption, Green friends etc
- Appointment & Probation: An employee will be on Probation for a period of two years from the date of appointment which is liable to be extended at the discretion of the committee for further periods not exceeding one year. An employee will be confirmed in the permanent position only on satisfactory completion of probation. Until the employee is informed in writing, an employee shall be deemed to be a probationer.

- Salary structure, perks and allowances: As per the prevailing norms, an employee appointed shall be paid monthly salary as mentioned in the appointment letter with effect from the of joining Amrita Vishwa Vidyapeetham
- Promotions: Any faculty member in order to qualify for continuing increments and/or promotion must demonstrate significant accomplishments in both teaching and research as prescribed from time to time by the University. The committee evaluates and ratifies all tenure promotions from assistant professor to associate professor, as well as, associate professor to professor. These promotions are based on peer review, presentation by faculty and interview by the committee. All multiple increments (other than routine annual cost of living increase increments) and promotions from assistant professor to professor to professor, must be approved by faculty recruitment & promotions committee
- Superannuation: Superannuation age for employees of the Amrita Vishwa Vidyapeetham shall be 58 years, and shall superannuate on the last date of the month in which the employee attains the superannuating age.
- Termination of Appointment: An employee on Probation is liable to be terminated from service with either side serving one month notice period or salary in lieu of the notice period. A permanent employee in the Academic Departments shall serve three months' notice period or salary in lieu of the notice period which shall invariably be in a manner that shall not affect the academic responsibilities entrusted to a faculty and with due diligence. A permanent employee in the Non-Teaching Departments shall serve one month's notice period or salary in lieu of the notice period.
- Leave: An employee may avail leave as per the rules and regulation of Amrita Vishwa Vidyapeetham as will be in vogue at any given time.

# Conduct

An employee shall adhere to the Conduct Rules of Amrita Vishwa Vidyapeetham, while in service failing which they are liable for punitive action for violation of such Rules and in the extreme case termination services without notice and/or compensation thereof. They shall be laid down as an Annexure to the appointment letter and each appointee shall be required to sign an acknowledge as having read and accepted the same. The conduct rules are as follows:

(a) Every employee shall at all times maintain absolute integrity and devotion to duty and also be honest and impartial in official dealings

(b) An employee shall at all times be courteous with other members of the staff, students, and members of the public

(c) Unless otherwise stated specifically in the terms of appointment, every employee is a whole time employee of Amrita Vishwa Vidyapeetham and may be called upon to perform such duties, as may be assigned by competent authority, beyond scheduled working hours and on Closed Holidays and Sundays. These duties shall inter-alia include attendance at meetings of Committees to which an employee may be appointed by Amrita Vishwa Vidyapeetham

(d) An employee shall be required to observed the scheduled hours of work, during which the employee must be present at the designated place of duty

(e) Except for valid reasons and/or unforeseen contingencies, no employee shall be absent from duty without prior permission

(f) An Employee should perform all the duties that are entrusted to the post designated to the employee and also any work that may be assigned by Dean/Chairperson/Competent Authority including attending to exam work assigned either by the Department or Amrita Vishwa Vidyapeetham during any time of the year. An employee shall work diligently and safeguard the interest and objectives of Amrita Vishwa Vidyapeetham at all times

(g) An employee will be responsible for the well being of students and their welfare while maintaining their discipline.

(h) Complete discipline and decorum shall be maintained in the campus and an employee shall not act in a manner that shall tarnish or be detrimental to the reputation of Amrita Vishwa Vidyapeetham

(i) No employee shall leave their duty station without the prior permission of the Competent Authority/Dean/Chairperson or Head of Department, during leave/vacation or otherwise. When leaving their duty station, they shall clearly inform in writing their contact details during the period of such absence.

10.1.4 Decentralization in working and grievance redressal mechanism

There is an exclusive department to address student grievances headed by a Prof. and assisted by a team of faculty. Members of the committee include:

Prof. P N Kumar (Head, Student Affairs)

Dr. Shailendra K (Prof. Students Welfare)

Dr. Janci Rani P R (Student Counsellor)

Dr. Sowndaram (Professional Counsellor)

Ms. Rajalakshmi (Professional Counsellor)

Dr. Tharani Devi (Faculty, Student Welfare)

The above members are assisted by the department student counsellors and advisors.

The following committees are also constituted for addressing faculty and student grievances involving sexual harassment and SC/ST grievance cell.

### **Anti-Ragging Committee**

| Dr.Sasangan Ramanathan     | Chairperson | Dr. M.Saimurugan   | Member |
|----------------------------|-------------|--------------------|--------|
| Dr. (Col). PN Kumar        | Member      | Ms. P Ambika       | Member |
| ССѠН                       | Member      | Dr. B Rajathilagam | Member |
| Dr. Balajee Ramakrishnanda | Member      | Dr. R Ramanathan   | Member |
| Dr. R Gowtham              | Member      | Dr. S.Selva Kumar  | Member |

### **Disciplinary Committee**

| Dr. (Col). PN Kumar     | Chairperson | Mr. D Unnikrishnan    | Member |
|-------------------------|-------------|-----------------------|--------|
| Dr. K.Bagavinar         | Member      | Dr. N.Harini          | Member |
| Dr. P V Suneesh         | Member      | Dr. P Prakash         | Member |
| Mr. N.Praveen Kumar     | Member      | Dr. A.Balasubramanian | Member |
| Dr. Udaya Bhaskar Reddy | Member      | Mr. M.Ganesan         | Member |
| Ragula                  |             |                       |        |
| Mr. T Rajesh Senthil    | Member      | Mr. N.Mohankumar      | Member |
| Kumar                   |             |                       |        |
| Mr. A S Prakash         | Member      | Dr. K R M Vijaya      | Member |
|                         |             | Chandrakala           |        |
| Dr. B. Soundharajan     | Member      | Mr. M Pushparajan     | Member |

### Women's Complaints & Redressal

| Dr. K M.Mini   | Chairperson | Ms K Shobana            | Member |
|----------------|-------------|-------------------------|--------|
| Dr. P. Supriya | Member      | Dr. Sasangan Ramanathan | Member |

# **Emergency Response Team Members**

| Dr. R Saravanan     | Dr. K Bagavinar       |
|---------------------|-----------------------|
| Mr. S Adarsh        | Dr. P.R.Janci Rani    |
| Mr. C Arunkumar     | Mr. V.V.SajithVariyer |
| Mr. Gopakumar       | Ms. R.Arthi           |
| Mr. Vijay Narayanan | Mr. M Ritwik          |
| Mr. P Sivaraj       | Mr. Kalidas           |

### SC/ST Complaints & Redressal Cell.

| Dr. S Mahadevan   | Chairman |
|-------------------|----------|
| Dr. T Palanisamy  | Member   |
| Dr.S.Padmavathi   | Member   |
| Dr. Anju S Pillai | Member   |
| Mr.K.Bakiaraj     | Member   |

10.1.5 Delegation of financial powers

- a. Department chairperson verifies the accuracy and validity of request for financial commitment from the department faculty. There is no ceiling for the first line of approval by the department chairperson.
- b. All financial approvals/commitments, regardless of the amount are routed through the office of Dean Engineering (campus Head).
- c. If the requested amount is greater than Rs. 1 Lakh, a detailed discussion is held between the Dean and the chairperson before approval.

d. >99% of the expense request has been approved in the past 5 years, up to a maximum of Rs. 50 Lakhs.

10.1.6. Transparency and availability of correct /unambiguous information in public domain Yes. The following steps are taken to ensure accurate information dissemination to all the stake holders.

- a. At the beginning of every semester, the academic calendar, time table for all classes, faculty time table and lab schedule are made available to all stake holders. This information is available to everyone from within the campus as well as from outside the campus through virtual private network.
- b. Policy information, list of members of committees, upcoming events, and student grades are available in the campus intranet (link: <u>https://intranet.cb.amrita.edu</u>)
- c. Access to library digital content is also available via the campus intranet.

10.2.1. Adequacy of budget allocation

**Table B. 10.2(a)**Income and expenditure summary for CFY (2018-19: unaudited), CFYm1,CFYm2 and CFYm3.

| Total Income in CFY (2018- |       |           | Actual experi | Total No. of |                |             |
|----------------------------|-------|-----------|---------------|--------------|----------------|-------------|
| 19)                        |       |           |               | students in  |                |             |
|                            |       |           |               | CFY: 6003    |                |             |
| Fee (Rs.                   | Govt. | Other     | Recurring     | Non-         | Special        | Expenditure |
| Lakh)                      |       | Sources   | including     | recurring    | Projects/Any   | per student |
|                            |       | (Specify) | Salaries      | (Rs. Lakh)   | other, specify | (Rs. Lakh)  |
|                            |       |           | (Rs. Lakh)    |              |                |             |
| 13126.3                    |       |           | 8614.6        | 1057.3       |                | 1.61        |

| Total Income in CFYm1 |       |           | Actual exp | enditure in ( | Total No. of |                 |
|-----------------------|-------|-----------|------------|---------------|--------------|-----------------|
| (2017-18)             |       |           | (2017-18)  |               |              | students in     |
|                       |       |           |            |               |              | CFYm1: 5925     |
| Fee (Rs.              | Govt. | Other     | Recurring  | Non-          | Special      | Expenditure per |
| Lakh)                 |       | Sources   | including  | recurring     | Projects/Any | student (Rs.    |
|                       |       | (Specify) | Salaries   | (Rs.          | other,       | Lakh)           |
|                       |       |           | (Rs.       | Lakh)         | specify      |                 |
|                       |       |           | Lakh)      |               |              |                 |
| 11445.0               |       |           | 8628.6     | 1298.1        |              | 1.67            |

| Total Income in CFYm2 |       |           | Actual exp | Total No. of |              |             |
|-----------------------|-------|-----------|------------|--------------|--------------|-------------|
| (2016-17)             |       |           | (2016-17)  |              |              | students in |
|                       |       |           |            |              |              | CFYm2:      |
|                       |       |           |            |              |              | 5693        |
| Fee (Rs.              | Govt. | Other     | Recurring  | Non-         | Special      | Expenditure |
| Lakh)                 |       | Sources   | including  | recurring    | Projects/Any | per student |
|                       |       | (Specify) | Salaries   | (Rs.         | other,       | (Rs. Lakh)  |
|                       |       |           | (Rs.       | Lakh)        | specify      |             |
|                       |       |           | Lakh)      |              |              |             |
| 10283.7               |       |           | 8040.5     | 1325.3       |              | 1.64        |

| Total Income in CFYm3 |       |           | Actual exp | CFYm3     | Total No. of |             |  |
|-----------------------|-------|-----------|------------|-----------|--------------|-------------|--|
| (2015-16)             |       |           | (2015-16)  | (2015-16) |              |             |  |
|                       |       |           |            | CFYm3:    |              |             |  |
|                       |       |           |            |           |              | 5455        |  |
| Fee (Rs.              | Govt. | Other     | Recurring  | Non-      | Special      | Expenditure |  |
| Lakh)                 |       | Sources   | including  | recurring | Projects/Any | per student |  |
|                       |       | (Specify) | Salaries   | (Rs.      | other,       | (Rs. Lakh)  |  |
|                       |       |           | (Rs.       | Lakh)     | specify      |             |  |
|                       |       |           | Lakh)      |           |              |             |  |
| 8997.1                |       |           | 7927.1     | 295.0     |              | 1.50        |  |

| Items         | Budgeted in CFY | Actual expenses in<br>CFY (2018-19) | Budgeted in<br>CFYm1 | Actual expenses in<br>CFYm1 (2017-18) | Budgeted in<br>CFYm2 | Actual expenses in<br>CFYm2 (2016-17) | Budgeted in<br>CFYm3 | Actual expenses in<br>CFYm3 (2015-16) |
|---------------|-----------------|-------------------------------------|----------------------|---------------------------------------|----------------------|---------------------------------------|----------------------|---------------------------------------|
| Infrastructur | 111.5           | 113.4                               | 1307.5               | 1306.8                                | 1174.3               | 1173.9                                | 886.9                | 885.2                                 |
| e Built-Up    |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Library       | 556.2           | 555.8                               | 68.3                 | 67.1                                  | 172.9                | 172.3                                 | 210.3                | 209.7                                 |
| Laboratory    | 257.2           | 258.7                               | 423.0                | 422.5                                 | 345.3                | 344.6                                 | 186.7                | 185.3                                 |
| Equipment     |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Laboratory    | 39.6            | 40.4                                | 41.2                 | 40.3                                  | 25.2                 | 23.8                                  | 103.6                | 104.2                                 |
| consumables   |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Teaching      | 5261.0          | 5262.2                              | 5225.4               | 5224.3                                | 4944.0               | 4943.1                                | 4384.0               | 4383.4                                |
| and non-      |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| teaching      |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| staff salary  |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Maintenance   | 509.5           | 508.1                               | 355.6                | 354.8                                 | 494.6                | 493.9                                 | 415.5                | 418.7                                 |
| and spares    |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| R&D           | 170.1           | 168.7                               | 133.0                | 131.5                                 | 133.0                | 132.4                                 | 153.2                | 154.3                                 |
| Training and  | 104.2           | 102.0                               | 1201.1               | 122.4                                 | 123.4                | 122.8                                 | 93.4                 | 92.9                                  |
| travel        |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Miscellaneo   | 1126.8          | 1125.7                              | 1372.3               | 1371.5                                | 1112.8               | 1111.7                                | 1043.5               | 1044.0                                |
| us expenses*  |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Others,       | 1538.3          | 1536.9                              | 886.0                | 885.1                                 | 846.3                | 847.1                                 | 743.8                | 744.3                                 |
| specify**     |                 |                                     |                      |                                       |                      |                                       |                      |                                       |
| Total         | 9674.4          | 9671.9                              | 11013.4              | 9926.3                                | 9371.8               | 9365.6                                | 8220.9               | 8222.0                                |
|               | 0               | 0                                   | 0                    | 0                                     | 0                    | 0                                     | 0                    | 0                                     |

**Table B. 10.2(b)** Details of the Institute level expense for CFY (2018-19: unaudited), CFYm1, CFYm2, and CFYm3 (all figures are in Rs. Lakhs).

\*includes charges related to Advertisement/Publicity/Affiliation, Staff welfare expenses etc.

\*\*includes charges related to school level software licenses, scholarship, operational and administrative expenses, vehicle, AC, security, etc.

The yearly budget is prepared based on the academic and research requirements of the departments. Budget discussion is held at the department level headed by the chairperson. A formal budget is submitted to the Dean for review. Dean will consolidate the campus level budget and submit to management for approval and sanction. Predominantly, the management approves the final budget submitted by the Dean. For the past 4 years (including the current financial year), the allocated budget and utilization have been adequate (refer to Tables B. 10.2a and 10.2b)

### 10.2.2 Utilization of allocated funds

Individual department chairpersons are notified regarding the sanctioned budget. Expenses for infra-structure, maintenance and house-keeping are maintained at the University/campus level, while the departments are responsible for expenses related to lab equipment, consumables, travel and training expense etc. Library expense is approved and maintained by the Dean/Principal. The sanctioned budget was effectively utilized for the past 4 years (refer to Tables B.10.2a and 10.2b).

### 10.2.3 Availability of the audited statements on the Institute's website

#### Yes

10.3. Program Specific Budget Allocation and Utilization for the Department of Civil Engineering:

**Table B. 10.3(a)** Current financial year (CFY 2018-19), CFYm1, CFYm2 and CFYm3. Allfigures are in Rs. Lakhs.

| <b>Total Budget in CFY: 2018-</b> |           | Actual expend | liture in | Total No. of     |
|-----------------------------------|-----------|---------------|-----------|------------------|
| 19                                |           | CFY (2018-19) |           | students in CFY: |
|                                   |           |               |           | 333              |
| Non-                              | Recurring | Non-          | Recurring | Expenditure per  |
| Recurring                         |           | Recurring     |           | student          |
| 37.56                             | 457.1     | 37.12         | 456.3     | 1.48             |

| Total Budget in CFYm1: 2017- |           | Actual expenditure in |           | Total No. of students |
|------------------------------|-----------|-----------------------|-----------|-----------------------|
| 18                           |           | CFYm1: 2017-18        |           | in CFYm1: 335         |
| Non-                         | Recurring | Non-                  | Recurring | Expenditure per       |
| Recurring                    |           | Recurring             |           | student               |
| 78.1                         | 406.3     | 77.68                 | 405.6     | 1.44                  |

| Total Budget in CFYm2: 2016- |           | Actual expend | iture in  | Total No. of students |  |  |  |
|------------------------------|-----------|---------------|-----------|-----------------------|--|--|--|
| 17                           |           | CFYm2: 2016   | -17       | in CFYm2: 338         |  |  |  |
| Non-                         | Recurring | Non-          | Recurring | Expenditure per       |  |  |  |
| Recurring                    |           | Recurring     |           | student               |  |  |  |
| 80.50                        | 395.8     | 79.93         | 396.4     | 1.41                  |  |  |  |

| Total Budget i | n CFYm3: 2015- | Actual expend | iture in  | Total No. of students |  |  |  |
|----------------|----------------|---------------|-----------|-----------------------|--|--|--|
| 16             |                | CFYm3: 2015   | -16       | in CFYm3: 307         |  |  |  |
| Non-           | Recurring      | Non-          | Recurring | Expenditure per       |  |  |  |
| Recurring      |                | Recurring     |           | student               |  |  |  |
| 62.00          | 334.2          | 61.62         | 333.6     | 1.29                  |  |  |  |

| Items         | Budgeted in CFY | Actual expenses in<br>CFY (2018-19) | Budgeted in<br>CFYm1 | Actual expenses in<br>CFYm1 (2017-18) | Budgeted in<br>CFYm2 | Actual expenses in<br>CFYm2 (2016-17) | Budgeted in<br>CFYm3 | Actual expenses in<br>CFYm3 (2015-16) |  |
|---------------|-----------------|-------------------------------------|----------------------|---------------------------------------|----------------------|---------------------------------------|----------------------|---------------------------------------|--|
| Laboratory    | 22.20           | 21.81                               | 2.50                 | 4.19                                  | 2.00                 | 1.57                                  | 7.35                 | 7.48                                  |  |
| Equipment     |                 |                                     |                      |                                       |                      |                                       |                      |                                       |  |
| Software      | 2.10            | 1.94                                | 1.20                 | 1.03                                  | 1.65                 | 1.58                                  | 1.00                 | 0.66                                  |  |
| Laboratory    | 2.15            | 2.24                                | 2.50                 | 2.28 1.80                             |                      | 1.41                                  | 6.00                 | 5.86                                  |  |
| consumables   |                 |                                     |                      |                                       |                      |                                       |                      |                                       |  |
| Maintenance   | 27.50           | 28.18                               | 20.50                | 20.06                                 | 30.50                | 29.32                                 | 25.50                | 23.56                                 |  |
| and spares    |                 |                                     |                      |                                       |                      |                                       |                      |                                       |  |
| R&D           | 10.00           | 9.35                                | 7.85                 | 7.43                                  | 8.50                 | 7.86                                  | 8.00                 | 8.68                                  |  |
| Training and  | 6.00            | 5.66                                | 7.10                 | 6.92                                  | 7.20                 | 7.29                                  | 4.90                 | 5.22                                  |  |
| travel        |                 |                                     |                      |                                       |                      |                                       |                      |                                       |  |
| Miscellaneous | 63.00           | 62.44                               | 76.70                | 77.54                                 | 67.50                | 66.00                                 | 60.00                | 58.75                                 |  |
| expenses*     |                 |                                     |                      |                                       |                      |                                       |                      |                                       |  |
| Total         | 132.95          | 131.62                              | 118.35               | 119.45                                | 119.15               | 115.03                                | 112.75               | 110.21                                |  |

**Table B. 10.3(b)** Current financial year (CFY 2018-19 unaudited), CFYm1, CFYm2 and CFYm3. All figures are in Rs. Lakhs.

\*includes expenses related to department administration, staff welfare, guest lectures, affiliation etc.

10.3.1 Adequacy of budget allocation

The allocated budget was used to meet the requirements of purchase of new equipment, additional infrastructure needs, replacement and upgrade of old equipment, consumables for smooth operation of labs, and travel for conferences, workshops and faculty development programs. Spending of sanctioned amount is closely monitored by the department chairperson, Dean and accounts department. Tables B.10.3a and 10.3b show the budget allocation by management was adequate for the smooth functioning of the department in the past 4 years (including the financial year ending March 2019). 10.3.2 Utilization of allocated funds

The department chairperson is informed about the sanctioned budget prior to the beginning of the next financial year. Expenses related to the purchase of new equipment, software, laboratory consumables, repair/maintenance of lab equipment and travel are the responsibility of the department chairperson. Expense related requests are considered on a case by case basis and approved by Dean. Sanctioned budget was adequately managed over the last 4 years as seen in Tables B.10.3a and 10.3b.

### **10.4. Library and Internet**

# 10.4.1. Quality of learning resources (hard/soft)

| E-Resources   |       |  |  |  |  |  |  |  |
|---------------|-------|--|--|--|--|--|--|--|
| e-Books       | 16434 |  |  |  |  |  |  |  |
| e-Journals    | 14739 |  |  |  |  |  |  |  |
| Databases     | 14    |  |  |  |  |  |  |  |
| DVD/CD        | 5307  |  |  |  |  |  |  |  |
| Dissertations | 3797  |  |  |  |  |  |  |  |
| Print Resourc | es    |  |  |  |  |  |  |  |
| Books         | 67235 |  |  |  |  |  |  |  |
| Periodicals   | 265   |  |  |  |  |  |  |  |

### 1. Relevance of available learning resources including e- resources

### List of Databases

| Sno | Database           |
|-----|--------------------|
| 1   | ACM                |
| 2   | ASCE               |
| 3   | ASME               |
| 4   | Access Engineering |
| 5   | ASTM               |
| 6   | EBSCO: CMMC        |
| 7   | IEEE Xplore        |
| 8   | J-Gate (JET)       |

| 9  | JSTOR              |
|----|--------------------|
| 10 | Science Direct     |
| 11 | Scopus             |
| 12 | Web of Science     |
| 13 | Springer eJournals |
| 14 | Springer eBooks    |

# 2. Accessibility to students

- Fully Automated Library with LAN and Wi-Fi connection for accessing e-Resources and Internet
- Library is arranging orientation and Hands-on-training to all students.
- Working hours 8 am to 10 pm
- All e-resources accessible across the campus through WiFi
- Digital Library with Ethernet, UPS connectivity, seating capacity of 170
- WEB OPAC
- Institutional Repository (Soft copy of Ph.D Theses, Dissertation, Project reports, Examination papers)
- New Arrival Bulletin

# 3.Support to students for self learning activities

- 1. NPTEL
- 2. National Digital Library
- 3. Swayam Prabha,
- 4. e-PG Pathsala, Swayam,
- 5. South Asian Archive
- 6. EDX
- 7. UGC MOOCs
- 8. National Academy Repository
- 9. VIDYA Digital Library
- 10. World eBook Library

### **10.4.2. Internet**

• Name of the Internet bandwith with provider

| 1 Gbps NKN Link - BSNL  |  |
|-------------------------|--|
| 100 Mbps - BSNL         |  |
| 80 Mbps - Blu Ultraband |  |

- Wi Fi availability: WiFi is available at all Academic Areas, Library and Hostels. All students can access the WiFi using their own username and password.
- Internet access in labs, classrooms, library and offices of all Departments: Internet can be accessed from all labs, library, offices, departments etc. Network connectivity is also provided in all classrooms with internet. This connectivity is through LAN cables over and above the WiFi connectivity provided. All the buildings are interlinked through high speed fibre cable with High Bandwidth connectivity.
- Security arrangements : Network security is provided using a perimeter security device and also at all end points. At the perimeter a dual firewalling solution with Basic Firewalling features, Content/Application Filtering, Bandwidth Management, Global VPN, Gateway Antivirus, Botnet Filter, Intrusion Prevention, Anti-Spyware, Geo IP Filtering and Failover Load Balancing take care of all traffic that comes into the campus and going out of the campus. At all end points, desktops are installed

# **Declaration**



Amritapuri Bengaluru Coimbatore

Amritanagar P. O., Ettimadai, Coimbatore - 641 112 Tamil Nadu, INDIA. Ph: +91 422 2685000 Fax: +91 422 2686274 E-mail : ase@amrita.edu

# Declaration

I undertake that, the institution is well aware about the provisions in the NBA's accreditation manual concerned for this application, rules, regulations, notifications and NBA expert visit guidelines in force as on date and the institute shall fully abide by them.

It is submitted that information provided in this Self-Assessment Report is factually correct. I understand and agree that an appropriate disciplinary action against the Institute will be initiated by the NBA in case any false statement/information is observed during pre-visit, visit, post visit and subsequent to grant of accreditation.

Date: April 26, 2019

Place: Coimbatore

Joyan Kawler Signature and Name Head of the Institution with seal



Department of Civil Engineering, Amrita School of Engineering, Coimbatore

# **ANNEXURE B 1**

### **PROGRAM OUTCOMES**

Engineering Graduates will be able to:

**PO1: Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**PO2: Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**PO3:** Design/development of solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**PO4: Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**PO5:** Modern tool usage: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

**PO6:** The engineer and society: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**PO7: Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**PO8: Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**PO9:** Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

**PO10: Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend

and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**PO11: Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**PO12: Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

### **PROGRAM SPECIFIC OUTCOMES**

**PSO1:** Ability to solve problems related to structural/ geotechnical/ transportation/ environmental engineering

**PSO2:** Provide design details with specifications and estimates for systems like buildings and hydraulic structures.

**PSO3:** Apply concepts of construction engineering, management and sustainability in project environment

# Annexure B 2.1

# Feedback form For Site/ Industry Visit/Invited Talk/Internship

| Details           |  |
|-------------------|--|
| Date              |  |
| Faculty In Charge |  |
| Roll No :         |  |

| How did this industrial visit contribute to the following? |   |        |           |  |  |  |  |  |  |  |
|--|---|--------|-----------|--|--|--|--|--|--|--|
| Question No.   | Questions   | Rating | Options   |  |  |  |  |  |  |  |
|  |   | 5      | Excellent |  |  |  |  |  |  |  |
| 1  |   | 4      | Very Good |  |  |  |  |  |  |  |
|  | Enhancement in engineering knowledge                        | 3      | Good      |  |  |  |  |  |  |  |
|  |   | 2      | Average   |  |  |  |  |  |  |  |
|  |   | 1      | Poor      |  |  |  |  |  |  |  |
|  |   | 5      | Excellent |  |  |  |  |  |  |  |
|  |   | 4      | Very Good |  |  |  |  |  |  |  |
| 2  | Enhancement in real life problem analysis skills            | 3      | Good      |  |  |  |  |  |  |  |
|  |   | 2      | Average   |  |  |  |  |  |  |  |
|  |   | 1      | Poor      |  |  |  |  |  |  |  |
|  |   | 5      | Excellent |  |  |  |  |  |  |  |
|  | Think of developing solutions with consideration for public | 4      | Very Good |  |  |  |  |  |  |  |
| 3  | health and safety; cultural, societal and environmental     | 3      | Good      |  |  |  |  |  |  |  |
|  | considerations  | 2      | Average   |  |  |  |  |  |  |  |
|  |   | 1      | Poor      |  |  |  |  |  |  |  |
|  |   | 5      | Excellent |  |  |  |  |  |  |  |
|  |   | 4      | Very Good |  |  |  |  |  |  |  |
| 4  | Research skills   | 3      | Good      |  |  |  |  |  |  |  |
|  |   | 2      | Average   |  |  |  |  |  |  |  |
|  |   | 1      | Poor      |  |  |  |  |  |  |  |
|  |   | 5      | Excellent |  |  |  |  |  |  |  |
|  |   | 4      | Very Good |  |  |  |  |  |  |  |
| 5  | Modern tool usage / exposure to new softwares               | 3      | Good      |  |  |  |  |  |  |  |
|  |   | 2      | Average   |  |  |  |  |  |  |  |
|  |   | 1      | Poor      |  |  |  |  |  |  |  |

|    |  | 5 | Excellent |
|----|--|---|-----------|
|    |  | 4 | Very Good |
| 6  | Awareness on the responsibilities of a professional to society | 3 | Good      |
|    |  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    | Exposure to situations /solutions involving environment and    | 4 | Very Good |
| 7  | sustainability   | 3 | Good      |
|    | sustainaointy  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    | Commitment to professional ethics, responsibilities and        | 4 | Very Good |
| 8  | norms of engineering practice                                  | 3 | Good      |
|    | norms of engineering practice                                  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    |  | 4 | Very Good |
| 9  | Individual and team effort                                     | 3 | Good      |
|    |  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    |  | 4 | Very Good |
| 10 | Communication  | 3 | Good      |
|    |  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    |  | 4 | Very Good |
| 11 | Project management attributes                                  | 3 | Good      |
|    |  | 2 | Average   |
|    |  | 1 | Poor      |
|    |  | 5 | Excellent |
|    |  | 4 | Very Good |
| 12 | Lifelong learning  | 3 | Good      |
|    |  | 2 | Average   |
|    |  | 1 | Poor      |

# **Annexure B 3.2 a** Student Exit Survey: Questions

- 1. Engineering knowledge: I expect that the technical knowledge and skills that I gained prepared me for success in my career and/or post-graduate education
- 2. Problem analysis: I can apply knowledge in the areas of mathematics, science and engineering to solve problems encountered in the practice of Civil Engineering.
- 3. Design/development of solutions: I have the ability to design experiments and derive meaningful solutions
- 4. Conduct investigations of complex problems: I have the basic skills to tackle problems of complex nature in my domain
- 5. Modern tool usage: I have acquired the ability to utilize the techniques, skills, modern engineering tools and computer based technologies necessary for effective Engineering practice.
- 6. The engineer and society: My education helped me to render services that make people's lives better, healthier and safer.
- 7. Environment and sustainability: My education prepared me to recognize and be aware of the social, ethical and environmental impacts of my scientific and engineering activities.
- 8. Ethics: I understand and appreciate the need for integrity and ethical decision making in my professional life.
- 9. Individual and team work: I have the ability to perform services requiring individual and team efforts
- 10. Communication: I have the ability to convey effectively in matters of written and oral forms of communication.
- 11. Project management and finance: I expect that my education has provided me with necessary skills for project management and finance and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- 12. Life-long learning: My education made me aware of the need for lifelong learning in my career, and the various ways in which this can be pursued.
- 13. Ability to solve problems related to structural/ geotechnical/ transportation/ environmental engineering
- 14. Provide design details with specifications and estimates for systems like buildings and hydraulic structures.
- 15. Apply concepts of construction engineering, management and sustainability in project environment

# Annexure B 3.2 b

# **Responses of Student Exit Survey**

| Name                | Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 |
|---------------------|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|
| Balaji CS           | 3  | 3  | 3  | 2  | 3  | 3  | 4  | 3  | 3  | 3   | 4   | 4   | 3   | 3   | 4   |
| Praharsha B S       | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5   | 5   | 5   | 5   | 5   | 5   |
| Roshan. R           | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5  | 5   | 4   | 5   | 5   | 5   | 5   |
| Thiviya SK          | 3  | 3  | 3  | 3  | 3  | 3  | 4  | 5  | 4  | 5   | 5   | 4   | 3   | 3   | 3   |
| Prasanth k          | 4  | 3  | 4  | 4  | 4  | 5  | 5  | 4  | 5  | 5   | 4   | 4   | 3   | 3   | 4   |
| Nisanth ES          | 4  | 4  | 3  | 3  | 3  | 3  | 4  | 4  | 3  | 3   | 3   | 3   | 3   | 3   | 3   |
| Arvind kannan       | 4  | 4  | 3  | 5  | 2  | 3  | 5  | 5  | 1  | 5   | 3   | 5   | 4   | 4   | 4   |
| Meganth Krishna S   | 3  | 3  | 4  | 4  | 1  | 3  | 4  | 4  | 4  | 4   | 2   | 5   | 4   | 2   | 3   |
| KSDN AASEESH        | 3  | 3  | 3  | 3  | 3  | 3  | 5  | 5  | 5  | 4   | 4   | 4   | 3   | 3   | 3   |
| Mohammed Salman     |    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |
| khizar              | 1  | 1  | 1  | 2  | 1  | 1  | 3  | 1  | 2  | 2   | 1   | 1   | 1   | 1   | 1   |
| Aswath Maharaja K M | 2  | 3  | 3  | 3  | 3  | 4  | 2  | 2  | 4  | 4   | 3   | 3   | 3   | 3   | 2   |
| Goutham KM          | 4  | 4  | 5  | 5  | 4  | 4  | 4  | 4  | 3  | 4   | 3   | 5   | 3   | 5   | 5   |
| S. Koushik Raj Raj  | 5  | 4  | 4  | 4  | 2  | 5  | 5  | 5  | 5  | 5   | 4   | 4   | 4   | 4   | 4   |
| NITISH KUMAR        | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4  | 4   | 4   | 4   | 4   | 4   | 4   |
| Manikandan          | 3  | 3  | 3  | 3  | 4  | 3  | 3  | 3  | 3  | 4   | 3   | 3   | 3   | 3   | 3   |
| Prabha              | 3  | 2  | 4  | 2  | 3  | 3  | 5  | 5  | 5  | 5   | 5   | 5   | 4   | 4   | 5   |
| Gowtham Raj         | 4  | 3  | 4  | 3  | 2  | 5  | 1  | 5  | 4  | 4   | 4   | 4   | 3   | 3   | 3   |
| Goutham G           | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 5  | 4   | 3   | 4   | 3   | 3   | 3   |
| Sree Mukund         | 2  | 3  | 3  | 2  | 4  | 3  | 2  | 4  | 5  | 4   | 2   | 4   | 3   | 1   | 4   |
| Swetha Krishna      | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 3  | 5  | 5   | 3   | 5   | 3   | 3   | 3   |
| H Ambrish Adithiya  | 5  | 4  | 5  | 4  | 4  | 5  | 5  | 5  | 5  | 4   | 5   | 4   | 4   | 4   | 5   |

| Bogathi Sai Sudheer |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
|---------------------|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Reddy               | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| Mouries             | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| Dharuneeshwar p     | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| Abhinash kumar      | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 4 | 4 | 4 |
| SarathSanjeev       | 3 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 3 | 3 |
| Aswathi G Krishnan  | 3 | 2 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 3 | 3 | 3 | 3 |
| Ganesha Prabhu C    | 1 | 1 | 5 | 1 | 1 | 1 | 5 | 5 | 5 | 5 | 5 | 5 | 1 | 1 | 1 |
| Raghavapriya S M    | 3 | 4 | 3 | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 |
| Sivakavinesh K      | 2 | 2 | 2 | 2 | 3 | 2 | 4 | 4 | 3 | 4 | 2 | 3 | 2 | 3 | 4 |
| Bhogadi Jagath      | 3 | 2 | 1 | 2 | 3 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 3 | 3 | 3 |
| V Narayanee         | 3 | 3 | 2 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 3 | 4 | 3 | 4 | 4 |
| Senthil Kumar S K   | 3 | 3 | 3 | 2 | 4 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 4 | 4 | 4 |
| Samyuktha Sathish   | 4 | 3 | 4 | 4 | 4 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 3 | 3 | 3 |
| Suja                | 3 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 5 | 4 | 4 | 4 | 4 | 4 |
| Shruthi             | 3 | 3 | 3 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 4 | 3 | 3 | 3 |
| Anagha Murali       | 2 | 1 | 2 | 2 | 2 | 3 | 2 | 2 | 3 | 4 | 3 | 2 | 2 | 1 | 2 |
| Vinithan Ks         | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| G.TAMILARASI        | 2 | 2 | 2 | 1 | 3 | 3 | 4 | 3 | 5 | 4 | 3 | 2 | 3 | 3 | 3 |
| Ajay arumugam       | 3 | 4 | 4 | 3 | 3 | 4 | 3 | 5 | 4 | 4 | 5 | 4 | 4 | 4 | 4 |
| M.R.GOWTHAM         |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| KUMAR               | 4 | 4 | 4 | 4 | 4 | 3 | 3 | 4 | 4 | 3 | 4 | 4 | 3 | 3 | 4 |
| Sirpi.A.S           | 2 | 1 | 2 | 2 | 1 | 3 | 3 | 4 | 4 | 4 | 3 | 2 | 3 | 2 | 3 |
| Kangodian Chaitanya | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| JOHN JESURAN        | 2 | 4 | 4 | 3 | 3 | 4 | 5 | 3 | 4 | 4 | 5 | 1 | 3 | 3 | 4 |

|                 | Mark     | PO1   | PO2   | PO3   | PO4   | PO5   | PO6   | PO7   | PO8   | PO9 | PO10  | PO11  | PO12  | PSO1 | PSO2  | PSO3 |
|-----------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-----|-------|-------|-------|------|-------|------|
| Excellent       | 5        | 5     | 3     | 6     | 6     | 4     | 9     | 13    | 14    | 16  | 14    | 11    | 12    | 3    | 4     | 6    |
| Very good       | 4        | 11    | 14    | 15    | 11    | 13    | 11    | 14    | 16    | 15  | 22    | 12    | 18    | 11   | 11    | 16   |
| good            | 3        | 19    | 18    | 16    | 16    | 19    | 21    | 13    | 11    | 11  | 7     | 17    | 9     | 26   | 23    | 18   |
| Satisfactory    | 2        | 7     | 5     | 5     | 9     | 4     | 1     | 3     | 2     | 1   | 1     | 3     | 3     | 2    | 2     | 2    |
| Poor            | 1        | 2     | 4     | 2     | 2     | 4     | 2     | 1     | 1     | 1   | 0     | 1     | 2     | 2    | 4     | 2    |
| Total number of | students | 44    | 44    | 44    | 44    | 44    | 44    | 44    | 44    | 44  | 44    | 44    | 44    | 44   | 44    | 44   |
| A= Weighted     | AVG      | 142   | 139   | 150   | 142   | 141   | 156   | 167   | 172   | 176 | 181   | 161   | 167   | 143  | 141   | 154  |
| B=5* Total stu  | udents   | 220   | 220   | 220   | 220   | 220   | 220   | 220   | 220   | 220 | 220   | 220   | 220   | 220  | 220   | 220  |
| A*100 /B        | }        | 64.55 | 63.18 | 68.18 | 64.55 | 64.09 | 70.91 | 75.91 | 78.18 | 80  | 82.27 | 73.18 | 75.91 | 65   | 64.09 | 70   |
| PO attainment   | level    | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3     | 3   | 3     | 3     | 3     | 3    | 3     | 3    |

Annexure B 3.2 c Student exit survey: Indirect Po Calculation

# Annexure B 3.3

# Employer survey Questionnaire Department of Civil Engineering Amrita School of Engineering, Amrita Vishwa Vidyapeetham PERFORMANCE FEEDBACK ON ALUMNI

The purpose of this feedback is to gain first-hand information about the overall performance of Amrita School of Engineering Alumni, who are working in your esteemed organization.

# Company Name-

# Name of the Employee:

### **Performance**:

Please tick appropriate option.

| Technical capability:   | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |
|-------------------------|--|
| Modern tool usage       | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |
| Social Commitment       | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |
| Behavioural Aspects:    | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |
| Communication Skill:    | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |
| Team Work & Leadership: | $\circ$ Excellent $\circ$ Very good $\circ$ Good $\circ$ Fair $\circ$ Poor |

Any other comments:

Name & Designation

# Annexure B 5.1 Faculty of the Department

Academic Year 2018-2019

| ır                        |                         | Qualification                 |                          | uo                             |                                  | as<br>or  | uo                            |                      |                                   | A<br>R                     | cade<br>esea  | emic<br>arch  | tte of<br>ated is  |   |
|---------------------------|-------------------------|-------------------------------|--------------------------|--------------------------------|----------------------------------|---|-------------------------------|----------------------|-----------------------------------|----------------------------|---------------|---|--|---|
| Name of the faculty membe | Degree (Highest Degree) | University                    | Year of attaining Higher | Association with the instituti | Designation                      | Date on which Designated a<br>Professor/Associate Profess | Date of Joining the Instituti | Department           | Specialization                    | Research Paper Publication | Ph.D.Guidance | Faculty receiving Ph.D during<br>the assessment years | Currently associated (Y/N) Da<br>leaving (in case currentltyassoci<br>("No") | Nature of Association<br>(Regular/Contract) |
| Dr.K.M.Mini               | Ph D                    | Anna University,<br>Chennai   | 2008                     | 23                             | Professor &<br>Chairperson       | 01-07-2011  | 22-07-1996                    | Civil<br>Engineering | Structural<br>Engineering         | 30                         | 4             | nil   | Yes  | Regular                                     |
| Dr.K.B.Anand              | Ph D                    | IIT Madras                    | 2001                     | 9                              | Professor                        | 1-1-2011  | 1-4-2010                      | Civil<br>Engineering | Building<br>Technology            | 23                         | 5             | 1   | Yes  | Regular                                     |
| Dr. Dhanya Sathyan        | Ph D                    | Amrita Vishwa<br>Vidyapeetham | 2019                     | 13.5                           | Assistant<br>Professor<br>(Sr.G) | NA  | 8-8-2005                      | Civil<br>Engineering | Structural<br>Engineering         | 19                         | nil           | nil   | yes  | Regular                                     |
| Dr.Anilkumar<br>Sharma    | Ph D                    | IISc Bangalore                | 2015                     | 3                              | Assistant<br>Professor<br>(SG)   | NA  | 07-01-2016                    | Civil<br>Engineering | Geotechnical<br>Engineering       | 10                         | 3             | nil   | Yes  | Regular                                     |
| Dr.Soundharajan.B         | Ph D                    | IIT Madras                    | 2011                     | 1                              | Assistant<br>Professor<br>(SG)   | NA  | 22.01.2018                    | Civil<br>Engineering | Water<br>resources<br>engineering | 14                         | 1             | nil   | Yes  | Regular                                     |

| Dr.Haridharan.M.K   | Ph D   | National Institute of<br>Technology - Trichy               | 2016 | 1.5  | Assistant<br>Professor<br>[Sr.Gr}    | 06-12-2017 | 06-12-2017 | Civil<br>Engineering | Structural<br>Engineering                         | 15 | 3   | nil | Yes | Regular |
|---------------------|--------|--|------|------|--------------------------------------|------------|------------|----------------------|---|----|-----|-----|-----|---------|
| Dr. Mithun Mohan    | Ph D   | IIT Roorkee  | 2017 | 0.75 | Assistant<br>Professor<br>[Sr.Gr]    | NA         | 16-07-2018 | Civil<br>Engineering | Transportation<br>Engineering                     | 9  | nil | nil | Yes | Regular |
| Mr.M. Ananthkumar   | M.E    | TCE Madurai  | 2009 | 10   | Assistant<br>Professor<br>(Sr.Grade) | NA         | 01.08.2009 | Civil<br>Engineering | Structural<br>Engineering                         | 4  | nil | nil | yes | Regular |
| Mr. C.Prakash       | M.Tech | IIT, Kanpur  | 2006 | 9    | Assistant<br>Professor               | NA         | 7.06.2010  | Civil<br>Engineering | Environmental<br>Engineering<br>and<br>Management | 6  | nil | nil | Yes | Regular |
| Mr.P.Rakesh         | M.Tech | National Institute of<br>Technology<br>Karnataka Surathkal | 2013 | 5.5  | Assistant<br>Professor               | NA         | 10.07.2103 | Civil<br>Engineering | Construction<br>Technology<br>and<br>Management   | 1  | nil | nil | yes |         |
| Mr. R. Ramkrishnan  | M.Tech | SRM university   | 2014 | 4.75 | Assistant<br>Professor               | NA         | 11.06.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                       | 15 | nil | nil | Yes | Regular |
| Mr.E.Lalith Prakash | M.E    | Anna University,<br>Chennai                                | 2013 | 4.75 | Assistant<br>Professor               | NA         | 07.07.2014 | Civil<br>Engineering | Construction<br>Engineering<br>Management         | 5  | nil | nil | Yes | Regular |
| Ms.M.Surya          | M.E    | Anna University,<br>Chennai                                | 2014 | 4.5  | Assistant<br>Professor               | NA         | 16.07.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                       | 1  | nil | nil | Yes | Regular |
| Ms.V.Poornima       | M.E    | Anna University,<br>Chennai                                | 2012 | 3.75 | Assistant<br>Professor               | NA         | 22.06.2015 | Civil<br>Engineering | Structural<br>Engineering                         |    | nil | nil | Yes | Regular |

|                            |                         | Qualification               |   |                                  |                                      |  |                                 |                      |                             | 1                          | Academic<br>Research |  | ving<br>")  | act)                                 |
|----------------------------|-------------------------|-----------------------------|---|----------------------------------|--------------------------------------|--|---------------------------------|----------------------|-----------------------------|----------------------------|----------------------|--|---|--------------------------------------|
| Name of the faculty member | Degree (Highest Degree) | University                  | Year of attaining Higher<br>analification | Association with the institution | Designation                          | Date on which Designated as<br>Professor/Associate Professor | Date of Joining the Institution | Department           | Specialization              | Research Paper Publication | Ph.D.Guidance        | Faculty receiving Ph.D during the assessment years | Currently associated (Y/N) Date of lea<br>(in case currentltyassociated is ("No | Nature of Association (Regular/Contr |
| Dr.K.M.Mini                | Ph D                    | Anna University,<br>Chennai | 2008                                      | 23                               | Professor &<br>Chairperson           | 01-07-2011   | 22-07-1996                      | Civil<br>Engineering | Structural<br>Engineering   | 30                         | 4                    | nil  | Yes   | Regular                              |
| Dr.K.B.Anand               | Ph D                    | IIT Madras                  | 2001                                      | 9                                | Professor                            | 1-1-2011   | 1-4-2010                        | Civil<br>Engineering | Building<br>Technology      | 23                         | 5                    | 1  | Yes   | Regular                              |
| Ms. Dhanya Sathyan         | M.Tech                  | NIT Calicut                 | 2019                                      | 13.5                             | Assistant<br>Professor<br>(Sr.G)     | NA   | 8-8-2005                        | Civil<br>Engineering | Structural<br>Engineering   | 19                         | nil                  | nil  | Yes   | Regular                              |
| Dr.Anil Kumar<br>Sharma    | Ph D                    | IISc Bangalore              | 2015                                      | 3                                | Assistant<br>Professor<br>(SG)       | NA   | 07-01-2016                      | Civil<br>Engineering | Geotechnical<br>Engineering | 10                         | 3                    | nil  | nil   | Regular                              |
| Mr.M. Ananthkumar          | M.E                     | TCE Madurai                 | 2009                                      | 10                               | Assistant<br>Professor<br>(Sr.Grade) | NA   | 01.08.2009                      | Civil<br>Engineering | Structural<br>Engineering   | 4                          | nil                  | nil  | Yes   | Regular                              |

| Mr. C.Prakash       | M.Tech | IIT, Kanpur  | 2006 | 9    | Assistant<br>Professor            | NA | 7.06.2010  | Civil<br>Engineering | Environmental<br>Engineering<br>and<br>Management | 6  | nil | nil | Yes        | Regular |
|---------------------|--------|--|------|------|-----------------------------------|----|------------|----------------------|---|----|-----|-----|------------|---------|
| Mr.P.Rakesh         | M.Tech | National Institute of<br>Technology<br>Karnataka Surathkal | 2013 | 5.5  | Assistant<br>Professor            | NA | 10.07.2103 | Civil<br>Engineering | Construction<br>Technology<br>and<br>Management   | 1  |     |     | Yes        |         |
| Mr. R. Ramkrishnan  | M.Tech | SRM university   | 2014 | 4.75 | Assistant<br>Professor            | NA | 11.06.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                       | 15 | nil | nil | Yes        | Regular |
| Mr.E.Lalith Prakash | M.E    | Anna University,<br>Chennai                                | 2013 | 4.75 | Assistant<br>Professor            | NA | 07.07.2014 | Civil<br>Engineering | Construction<br>Engineering<br>Management         | 5  | nil | nil | Yes        | Regular |
| Ms.M.Surya          | M.E    | Anna University,<br>Chennai                                | 2014 | 4.5  | Assistant<br>Professor            | NA | 16.07.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                       | 1  | nil | nil | Yes        | Regular |
| Ms.V.Poornima       | M.E    | Anna University,<br>Chennai                                | 2012 | 3.75 | Assistant<br>Professor            | NA | 22.06.2015 | Civil<br>Engineering | Structural<br>Engineering                         |    | nil | nil | Yes        | Regular |
| Dr.K.Sreevalsa      | Ph D   | IISC Bangalore   | 2013 | 3    | Assistant<br>Professor<br>[Sr.Gr] | NA | 01.10.2015 | Civil<br>Engineering | Geotechnical<br>Engineering                       | 7  | nil | nil | 29.11.2018 | Regular |
| Dr.Rahul            | Ph D   | IISC Bangalore   | 2015 | 1.5  | Assistant<br>Professor<br>[Sr.Gr] | NA | 07.12.2016 | Civil<br>Engineering | Transportation<br>Engineering                     | 1  | nil | nil | 31.05.2018 | Regular |
| Ms.Sruthy.S         | M.E    | NIT Calicut  | 2014 | 4.5  | Assistant<br>Professor            | NA | 02.06.2014 | Civil<br>Engineering | Offshore<br>structures                            | 3  | nil | nil | 04.01.2019 | Regular |

Academic Year 2016-2017

| H                         |                         | Qualification               |   | on                             |                                      | s<br>Dr  | u                             |                      |   | A<br>R                     | cadeı<br>esear | nic<br>·ch  | te of<br>'')  |   |
|---------------------------|-------------------------|-----------------------------|---|--------------------------------|--------------------------------------|--|-------------------------------|----------------------|---|----------------------------|----------------|---|---|---|
| Name of the faculty membe | Degree (Highest Degree) | University                  | Year of attaining Higher<br>qualification | Association with the instituti | Designation                          | Date on which Designated a<br>Professor/Associate Professo | Date of Joining the Instituti | Department           | Specialization                                    | Research Paper Publication | Ph.D.Guidance  | Faculty receiving Ph.D<br>during the assessment years | Currently associated (Y/N) Da<br>leaving (in case<br>currentltyassociated is ("No | Nature of Association<br>(Regular/Contract) |
| Dr.K.M.Mini               | Ph D                    | Anna University,<br>Chennai | 2008                                      | 23                             | Professor &<br>Chairperson           | 01-07-2011   | 22-07-1996                    | Civil<br>Engineering | Structural<br>Engineering                         | 30                         | 4              | nil   | Yes   | Regular                                     |
| Dr.K.B.Anand              | Ph D                    | IIT Madras                  | 2001                                      | 9                              | Professor                            | 1-1-2011   | 1-4-2010                      | Civil<br>Engineering | Building<br>Technology                            | 23                         | 5              | 1   | Yes   | Regular                                     |
| Ms. Dhanya Sathyan        | M.tech                  | NIT Calicut                 | 2019                                      | 13.5                           | Assistant<br>Professor<br>(Sr.G)     | NA   | 8-8-2005                      | Civil<br>Engineering | Structural<br>Engineering                         | 19                         | nil            | nil   | Yes   | Regular                                     |
| Dr.Anil Kumar<br>Sharma   | Ph D                    | IISc Bangalore              | 2015                                      | 3                              | Assistant<br>Professor<br>(SG)       | NA   | 07-01-2016                    | Civil<br>Engineering | Geotechnical<br>Engineering                       | 10                         | 3              | nil   | Yes   | Regular                                     |
| Mr.M. Ananthkumar         | M.E                     | TCE Madurai                 | 2009                                      | 10                             | Assistant<br>Professor<br>(Sr.Grade) | NA   | 01.08.2009                    | Civil<br>Engineering | Structural<br>Engineering                         | 4                          | nil            | nil   | Yes   | Regular                                     |
| Mr. C.Prakash             | M.Tech                  | IIT, Kanpur                 | 2006                                      | 9                              | Assistant<br>Professor               | NA   | 7.06.2010                     | Civil<br>Engineering | Environmental<br>Engineering<br>and<br>Management | 6                          | nil            | nil   | Yes   | Regular                                     |

| Mr.P.Rakesh         | M.Tech | National Institute of<br>Technology<br>Karnataka Surathkal | 2013 | 5.5  | Assistant<br>Professor            | NA | 10.07.2013 | Civil<br>Engineering | Construction<br>Technology<br>and<br>Management | 1  | nil | nil | Yes        |         |
|---------------------|--------|--|------|------|-----------------------------------|----|------------|----------------------|---|----|-----|-----|------------|---------|
| Mr. R. Ramkrishnan  | M.Tech | SRM university   | 2014 | 4.75 | Assistant<br>Professor            | NA | 11.06.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                     | 15 | nil | nil | Yes        | Regular |
| Mr.E.Lalith Prakash | M.E    | Anna University,<br>Chennai                                | 2013 | 4.75 | Assistant<br>Professor            | NA | 07.07.2014 | Civil<br>Engineering | Construction<br>Engineering<br>Management       | 5  | nil | nil | Yes        | Regular |
| Ms.M.Surya          | M.E    | Anna University,<br>Chennai                                | 2014 | 4.5  | Assistant<br>Professor            | NA | 16.07.2014 | Civil<br>Engineering | Geotechnical<br>Engineering                     | 1  | nil | nil | Yes        | Regular |
| Ms.V.Poornima       | M.E    | Anna University,<br>Chennai                                | 2012 | 3.75 | Assistant<br>Professor            | NA | 22.06.2015 | Civil<br>Engineering | Structural<br>Engineering                       |    | nil | nil | Yes        | Regular |
| Dr.K.Sreevalsa      | Ph D   | IISC Banglaore   | 2013 | 3    | Assistant<br>Professor<br>[Sr.Gr] | NA | 01.10.2015 | Civil<br>Engineering | Geotechnical<br>Engineering                     | 7  | nil | nil | 29.11.2018 | Regular |
| Ms.Sruthy.S         | M.E    | NIT CALICUT  | 2014 | 4.5  | Assistant<br>Professor            | NA | 02.06.2014 | Civil<br>Engineering | Offshore<br>structures                          | 3  | nil | nil | 04.01.2019 | Regular |
| Mr.Sivasena Reddy   | M.E    | JNTU University,<br>Hyderabad                              | 2008 | 1.75 | Assistant<br>Professor            | NA | 12.01.2016 | Civil<br>Engineering | Water<br>resource and<br>GIS                    |    | nil | nil | 12.09.2017 | Regular |
| Ms.Suchitra         | M.E    | Anna University,<br>Chennai                                | 2012 | 3    | Assistant<br>Professor            | NA | 04.07.2014 | Civil<br>Engineering | Irrigation<br>water<br>management               |    | nil | nil | 05.06.2017 | Regular |

# Refer Annexure B 5. I

### Amrita SCHOOL OF ENGINEERING, Coimbatore

### PERIOD: Academic Year 2017-2018

### July 1, 2017 - June 30, 2018

| Name:        | Qualification:          |
|--------------|-------------------------|
| Designation: | Date of Joining Amrita: |
| Department:  | Date of Last Promotion: |
| Employee No. |                         |

### **INSTRUCTIONS FOR FILLING THE FORM:**

- 1. Enter values for APPLICABLE CATEGORIES ONLY
- 2. Journals and Conference proceedings without impact factor (IF) should be entered under IF < 1.0
- 3. Extramural funding can be from either Govt or Industry
- 4. Each campus can add campus specific Admin roles not covered in this form subject to School Head and Dean's approval
- Publications Copy and paste additional rows depending on the number of publications to be entered
- Campus specific tasks/events School Heads can add additional rows for tasks/events specific to their campus and assign appropriate points
- 7. Tasks completed by faculty, but not listed in the form can be added and discussed with Chairperson and brought to the attention of the School Head
|      | Points<br>per<br>count | Category                                 | Count                        | No. of Amrita<br>faculty as co- | Impact Factor | Total                       | REMARK                      |
|------|------------------------|--|------------------------------|---------------------------------|---------------|-----------------------------|-----------------------------|
|      |                        | TEACHING-                                |                              |                                 |               |                             |                             |
| Α    |                        | EVALUATION                               |                              |                                 |               |                             |                             |
|      |                        | ACTIVITIES                               |                              |                                 |               |                             |                             |
| Λ 1  | 80                     | UG Theory course and                     |                              |                                 |               | 0                           | Enter no. of theory courses |
| 111  | 00                     | evaluation (4 credit course)             |                              |                                 |               | U                           | handled under "count"       |
| Δ2   | 60                     | UG Theory course and                     |                              |                                 |               | 0                           | Enter no. of theory courses |
| A2   | 00                     | evaluation (3 credit course)             |                              |                                 |               | U                           | handled under "count"       |
| Δ3   | 40                     | UG Theory course and                     |                              |                                 |               | 0                           | Enter no. of theory courses |
| AJ   | 40                     | evaluation (2 credit course)             |                              |                                 |               | U                           | handled under "count"       |
| A.4  | 80                     | PG Theory courses (A credits)            | C Theory courses (4 credits) |                                 | 0             | Enter no. of theory courses |                             |
| 74   |                        | FO Theory courses (4 creans)             |                              |                                 |               | 0                           | handled under "count"       |
| ۸5   | 60                     | PG Theory courses (3 credits)            |                              |                                 |               | 0                           | Enter no. of theory courses |
| AJ   |                        |  |                              |                                 |               | 0                           | handled under "count"       |
| A.C. | 30                     | Faculty in charge of lab                 |                              |                                 |               | 0                           | Enter no. of labs the       |
| AU   |                        | (UG/PG)                                  |                              |                                 |               | U                           | faculty is in charge of     |
| 17   | 30                     | UG/PG Lab course (2 credits)             |                              |                                 |               | 0                           | Enter no. of lab courses    |
| A/   |                        |  |                              |                                 |               | 0                           | handled under "count"       |
| 48   | 15                     | UG Project Guide (per batch)             |                              |                                 |               | 0                           | Enter no. of UG batches     |
| AO   |                        |  |                              |                                 |               | U                           | under "count"               |
|      |                        | 15 UG Project Review committee<br>member |                              |                                 |               | 0                           | Enter "1" if you are a      |
| A9   | 15                     |  |                              |                                 |               |                             | member of review            |
|      |                        |  |                              |                                 |               |                             | committee                   |
| A10  | 20                     | DG Project Guide                         |                              |                                 |               | 0                           | Count = No. of PG           |
| AIU  | 20                     |  |                              |                                 |               |                             | scholars being guided       |
|      |                        | PG Project Review committee              |                              |                                 |               |                             | Enter "1" if you are a      |
| A11  | 15                     | member                                   |                              |                                 |               | 0                           | member of review            |
|      |                        |  |                              |                                 |               |                             | committee                   |
|      |                        | Ph D Thesis Advisor (Post-               |                              |                                 |               |                             | No of Ph.D. scholars in     |
| A12  | 25                     | 25 comprehensive)                        |                              |                                 |               | 0                           | reasarch phase being        |
|      |                        | comprenensive)                           |                              |                                 |               |                             | guided                      |

| A13         | 10  | Doctoral Committee member      |   |   | 0 | Count = Member of no. of<br>doctoral committee's |
|-------------|-----|--------------------------------|---|---|---|--|
|             |     | SUB-TOTAL                      |   |   | 0 |  |
|             |     |                                |   |   |   |  |
|             |     | RESEARCH &                     |   |   |   |  |
| В           |     | CONSULTANCY                    |   |   |   |  |
|             |     | ACTIVITIES                     |   |   |   |  |
| B.1         |     |                                |   |   |   |  |
| D 2         | 40  | No. of Research Proposals      |   |   | 0 | Only final submission with                       |
| <b>B</b> .2 | 40  | Submitted : PI or Co-PI        |   |   | 0 | Registrar approval                               |
|             |     | No. of extramural funded       |   |   |   | Angliashla during the sugar                      |
| B.3         | 60  | projects sanctioned (< 25      |   |   | 0 | Applicable during the year                       |
|             |     | Lakhs) - PI or Co-PI           |   |   |   | the grant was sanctioned                         |
|             |     | No. of extramural funded       |   |   |   | Applicable during the year                       |
| B.4         | 90  | research projects sanctioned   |   |   | 0 | Applicable during the year                       |
|             |     | (25 - 75 Lakhs) - PI or Co-PI  |   |   |   | the grant was sanctioned                         |
|             |     | No. of extramural funded       |   |   |   | Applicable during the year                       |
| B.5         | 150 | research projects sanctioned   |   |   | 0 | the grant was sanctioned                         |
|             |     | (> 75 lakhs) - PI or Co-PI     |   |   |   | the grant was salicitoned                        |
|             |     | Extramural Research Project    |   |   |   | Enter no. of active projects                     |
| B.6         | 60  | Execution - < Rs. 25 Lakhs     |   |   | 0 | being executed during the                        |
|             |     | (PI or Co-PI)                  |   |   |   | year of evaluation                               |
|             |     | Extramural Research Project    |   |   |   | Enter no. of active projects                     |
| B.7         | 100 | Execution - > Rs. 25 Lakhs     |   |   | 0 | being executed during the                        |
|             |     | (PI or Co-PI)                  |   |   |   | year of evaluation                               |
|             |     | No. of peer reviewed scopus    |   |   |   | UG/PG/Ph D students                              |
| B 8         | 50  | indexed publications           | 2 | 1 | 0 | NFFD NOT be counted as                           |
| <b>D</b> .0 | 50  | (International Journals): IF < | 2 | I | U | co authors                                       |
|             |     | 1.0                            |   |   |   | co-autiors.                                      |
|             |     | No. of peer reviewed scopus    |   |   |   | UG/PG/Ph. D. students                            |
| B.9         | 40  | indexed publications (National | 3 | 1 | 0 | NEED NOT be counted as                           |
|             |     | Journals): IF < 1.0            |   |   |   | co-authors.                                      |
|             |     | No. of scopus indexed          |   |   |   | UG/PG/Ph. D. students                            |
| B.10        | 30  | conference proceedings         | 4 | 1 | 0 | NEED NOT be counted as                           |
|             |     | publications: IF < 1.0         |   |   |   | co-authors.                                      |

| B.11 | 70 | No. of peer reviewed scopus<br>indexed publications<br>(International Journals): IF =<br>1.1 - 3.0  | 2 | 0 | UG/PG/Ph. D. students<br>NEED NOT be counted as<br>co-authors.   |
|------|----|---|---|---|--|
| B.12 | 60 | No. of peer reviewed scopus<br>indexed publications (National<br>Journals): <b>IF</b> = <b>1.1 - 3.0</b>  | 2 | 0 | NEED NOT be counted as<br>co-authors.  |
| B.13 | 50 | No. of scopus indexed<br>conference proceedings<br>publications: <b>IF 1.1 - 3.0</b>  | 2 | 0 | UG/PG/Ph. D. students<br><b>NEED NOT</b> be counted as<br>co-authors.  |
| B.14 | 80 | No. of peer reviewed scopus<br>indexed publications<br>(International Journals): IF =<br>> 3.0  | 2 | 0 | UG/PG/Ph. D. students<br>NEED NOT be counted as<br>co-authors.   |
| B.15 | 70 | No. of peer reviewed scopus<br>indexed publications (National<br>Journals): <b>IF</b> = > <b>3.0</b>  | 2 | 0 | UG/PG/Ph. D. students<br>NEED NOT be counted as<br>co-authors.   |
| B.16 | 60 | No. of scopus indexed<br>conference proceedings<br>publications: <b>IF &gt; 3.0</b>   | 3 | 0 | UG/PG/Ph. D. students<br>NEED NOT be counted as<br>co-authors.   |
| B.17 | 10 | No. of citations of your<br>publications with <b>"AMRITA</b><br><b>Affiliation"</b> from<br>"scopus.com" between <b>Jan</b><br><b>2017 - Dec 2017</b> |   | 0 | Count = No. of citations<br>with Amrita affiliation.<br>Print out of the citations<br>summary page from<br>scopus.com is needed. |
| B.18 | 80 | No. of Books authored/co-<br>authored (International<br>Publisher)  |   | 0 |  |
| B.19 | 60 | No. of Books authored/co-<br>authored (National Publisher)  |   | 0 |  |
| B.20 | 50 | No. of Books chapters<br>authored/co-authored<br>(International Publsiher)  |   | 0 |  |
| B.21 | 40 | No. of Books chapters<br>authored/co-authored<br>(National Publsiher)   |   | 0 |  |

| B.22 | 80  | Patents Filed                   |   |   | 0                         |                          |
|------|-----|---------------------------------|---|---|---------------------------|--------------------------|
| B.23 | 120 | Patents Granted                 |   |   | 0                         |                          |
|      |     | International Conference        |   |   |                           |                          |
| B.24 | 50  | conducted by Amrita (Chair or   |   |   | 0                         |                          |
|      |     | Co-chair)                       |   |   |                           |                          |
|      |     | International Conference        |   |   |                           |                          |
| B.25 | 30  | conducted by Amrita             |   |   | 0                         |                          |
|      |     | (Coordinator/member)            |   |   |                           |                          |
|      |     | SUB-TOTAL                       |   |   | 0                         |                          |
|      |     |                                 |   |   |                           |                          |
| С    |     | AWARDS and                      |   |   |                           |                          |
|      |     | RECOGNITIONS                    |   |   |                           |                          |
|      |     | Invited Speaker/Chair in an     |   |   |                           | Conv of Program schedule |
| C.1  | 60  | International Conference        |   | 0 | 0                         | details required         |
|      |     | (Outside India)                 |   |   |                           |                          |
|      |     | Invited Speaker/Chair in an     |   |   |                           | Conv of Program schedule |
| C.2  | 40  | International Conference        |   | 0 | 0                         | details required         |
|      |     | (Within India)                  |   |   | acturity required         |                          |
| C 3  | 200 | International recognition by an |   | 0 | 0                         | Association HQ should be |
| 0.5  |     | Association/Society             |   |   | U                         | outside India            |
| C 4  | 100 | National Recognition by an      |   | 0 | 0                         | Well known & establsihed |
| С.т  |     | Association/Society             |   |   | National Association      |                          |
|      |     | Members of faculty in-charge    |   |   |                           | E.g. CISCO ideate or     |
| C 5  | 100 | of a team winning National      |   | 0 | National/Stata laval      |                          |
| 0.5  | 100 | level Technical/ Cultural /     |   |   | U                         | football champions       |
|      |     | Sports events                   |   |   | rootoan champions         |                          |
|      |     | Members of faculty in-charge    |   |   |                           | E a ICPC champions       |
| CG   | 150 | of a team winning               |   | 0 | International competition |                          |
| 0.0  | 150 | International level Technical/  |   |   | U                         | held outside India       |
|      |     | Cultural / Sports events        |   |   | neid outside maia         |                          |
|      |     | SUB-TOTAL                       |   |   | 0                         |                          |
|      |     |                                 |   |   |                           |                          |
| р    |     | DEPARTMENTAL                    |   |   |                           |                          |
|      |     | ACTIVITIES                      |   |   |                           |                          |
| D.1  | 100 | Vice Chair (Dept faculty        | 0 | 0 |                           |                          |
|      | 100 | strength > 40)                  |   |   | Ū                         |                          |

| D.2  | 80  | Vice Chair (Dept faculty<br>strength < 40)                                    | 0 |   |
|------|-----|---|---|---|
| D.3  | 30  | Year / Batch Coordinator  | 0 |   |
| D.4  | 40  | Class Advisor   | 0 | PG Coordinator use this   |
| D.5  | 40  | Class/student Counselor   | 0 | Department counselor only   |
| D.6  | 20  | Dept Timetable Coordinator  | 0 | Count = 1 per semester  |
| D.7  | 60  | Dept NAAC / IQAC<br>coordinator   | 0 | NAAC is once in 4 years<br>and IQAC every year                              |
| D.8  | 80  | Dept Academic Coordinator<br>(points for handling student<br>strength of 240) | 0 | Count = Actual student<br>strength handled/240                              |
| D.9  | 20  | Course Mentor   | 0 | Count = No. of courses as<br>mentor   |
| D.10 | 30  | Course Chief Mentor   | 0 | Count = No. of courses as<br>chief mentor                                   |
| D.11 | 20  | Dept AUMS Coordinator   | 0 |   |
| D.12 | 30  | FDP/worlshop<br>Organizer/Coordinator   | 0 | Approval letter by Dean.  |
| D.13 | 30  | UG admissions coordinator   | 0 | Counseling only (June 2018)   |
| D.14 | 30  | PG admissions coordinator   | 0 |   |
| D.15 | 30  | Ph.D. admissions coordinator  | 0 |   |
| D.16 | 15  | Dept Placement Coordinator  | 0 |   |
| D.17 | 100 | Live in Labs<br>Coordinator/member (per<br>project)                           | 0 |   |
| D.18 | 100 | International Collaboration<br>(Industry/Academia)                            | 0 | Project Collaboration Copy<br>of MoU req.                                   |
| D.19 | 60  | National Collaboration<br>(Industry/Academia)                                 | 0 | Project Collaboration Copy<br>of MoU req.                                   |
| D.20 | 20  | TAG Lead  | 0 | Provide atleast 3 minutes<br>of TAG meeting / Semester                      |
| D.21 | 50  | Chairman of Amrita Vishwa<br>Vidyapeetham BoS (UG/PG)                         | 0 | Enter 1, if chairman of<br>either UG or PG. Enter 2,<br>if chairman of both |

| D.22 | 30  | Member of Amrita Vishwa<br>Vidyapeetham BoS (UG/PG)                          |  | 0 | Enter 1, if chairman of<br>either UG or PG. Enter 2,<br>if chairman of both |
|------|-----|--|--|---|---|
|      |     | SUB-TOTAL  |  | 0 |   |
|      |     |  |  |   |   |
| Е    |     | CAMPUS/UNIV<br>ADMINISTRATIVE<br>ACTIVITIES                                  |  |   |   |
| E.1  | 150 | Head, Student Affairs  |  | 0 | Enter 1 under "count", if applicable  |
| E.2  | 100 | Head, Research   |  | 0 | Enter 1 under "count", if<br>applicable                                     |
| E.3  | 150 | Campus Academic Coordinator  |  | 0 | Enter 1 under "count", if<br>applicable                                     |
| E.4  | 150 | Campus Dy Controller of<br>Examination                                       |  | 0 | Enter 1 under "count", if<br>applicable                                     |
| E.5  | 60  | Campus IQAC Coordinator  |  | 0 | Enter 1 under "count, if applicable   |
| E.6  | 20  | Campus Time Table Coordinator  |  | 0 | Count = 1 per semester  |
| E.7  | 100 | Campus AUMS Coordinator  |  | 0 | Enter 1 under "count, if<br>applicable                                      |
| E.8  | 30  | Campus/School level event<br>Coordinator (Cultural; Technical<br>and Sports) |  | 0 | Enter total no. of events coordinated                                       |
| E.9  | 20  | Campus/School level event<br>Member (Cultural; Technical and<br>Sports)      |  | 0 | Enter total no. of events coordinated                                       |
| E.10 | 30  | Campus Level Committee Chair<br>(e.g., mess, hostel, disciplinary<br>etc)    |  | 0 | Count = no. of committees<br>being chaired                                  |
| E.11 | 30  | Campus level Committee<br>Member (e.g, mess, hostel,<br>disciplinary, etc)   |  | 0 | Count = member of no. of<br>committees<br>Chair is also a member            |
| E.12 | 150 | Univ NAAC / IQAC<br>coordinator  |  | 0 |   |
|      |     | SUB-TOTAL  |  | 0 |   |
|      |     |  |  |   |   |
|      |     | GRAND TOTAL  |  | 0 |   |

General Guideline (only for reference and need not be printed as part of submission of this form) Select print area and exclude this section from the selected print area to avoid printing this section

# Publication

- Only published papers will be counted towards publication.
- A copy of just the first page of the publication to be attached as proof of publication.
- Publications from Jul 1, 2017 Jun 30, 2018 will be counted towards this review period
- Papers submitted for publication and not yet published will not be counted as publication for this review period

## Citations

- Citations include the total no. of citations with Amrita affiliation from scopus.com
- A print out of the summary page from scopus.com is sufficient. Citation period: Jan - Dec 2016 for this review period

## **Funded projects**

- A copy of the first page with Registrar's signature can be attached as proof of submission
- A copy of the official email or letter from funding agencies can be attached as proof of sanctioned projects
- Extramural funding includes funding from the Govt and Industry. Does not include the seed grant received from Amrita Vishwa Vidyapeetham

## Administration

- Each campus may have different administrative process and depending on the administrative process
- School Heads/Directors can add additional line items that pertain to administrative work not captured in the form
- School Heads/Directors can decide on the points normalized to the points assigned for a 3 credit course (60 points)

## Miscellaneous

- If there are achievements/tasks performed that are not captured, add them as separate line item and appropriate points can be assigned by the School Head/Director
- Printing

Print double sided for submission to Chairperson and/or School Head