



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

(Applicable for all the programs, except those granted full accreditation for 5 years as per Jan 2013 Manual)

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(January, 2016)

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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:

- Institute of National Importance
- University
- Deemed University** Year : 2003
- Autonomous
- Any other (Please specify)

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 status 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**
- 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 Institution(s)	Year of Establishment	Programs of Study	Location
Coimbatore Campus			
Amrita School of Business, Coimbatore	1996	MBA	Coimbatore, Tamil Nadu
Amritapuri Campus			
Amrita School of Engineering, Amritapuri, Kollam, Kerala	2002	B.Tech - Computer Science and Engg. B.Tech - Electronics and Communication Engg. B.Tech - Electrical and Electronics Engg. B.Tech - Mechanical Engg. M.Tech - Computer Science and Engineering M.Tech - Cyber Security M.Tech - Power and Energy Engineering M.Tech - Robotics & Automation M.Tech - Thermal and Fluid Engineering M.Tech - VLSI Design M.Tech - Wireless Networks and Applications MCA Ph.D	Amritapuri, Kollam, Kerala
Amrita School of Arts and Sciences, Amritapuri, Kollam, Kerala	2003	B.Com - Bachelor of Commerce BCA - Bachelor of Computer Applications BBA - Bachelor of Business Administration M.Com - Master of Commerce M.Sc. Chemistry M.Sc. Physics M.Sc Mathematics MSW - Master of Social Work MA English (2 Year)	Amritapuri, Kollam, 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 School of Biotechnology, Amritapuri, Kollam, Kerala	2005	B.Sc. Biotechnology	Amritapuri, Kollam, Kerala
		B.Sc. Microbiology	
		M.Sc. Biotechnology	
		M.Sc. Bioinformatics	
		M.Sc. Microbiology	
		Ph.D	
Amrita School of Ayurveda, Amritapuri, Kollam, Kerala	2004	BAMS	Amritapuri, Kollam, Kerala
		MD - Ayurveda Samhita	
		MD - Dravyaguna Vigyana	
		MD - Kayachikitsa	
		MD - Panchakarma	
		MD - Rasashastra & Bhaishajya Kalpana	
		MD - Swasthavritta	
		MS - Prasuti Tantra & Streeroga	
		MS - Shalakya Tantra (Netra Roga Vigyana)	
		MS - Shalya Tantra (Samanya)	
		Ph.D	
Bangalore Campus			
Amrita School of Engineering, Bangalore, Karnataka	2002	B.Tech - Computer Science and Engg.	Bangalore, Karnataka
		B.Tech - Electronics and Communication Engg.	
		B.Tech - Electrical and Electronics Engg.	
		B.Tech - Electronics and Instrumentation Engg.	
		B.Tech - Mechanical Engg.	

M.Tech - Communication Engg. & Signal Processing

M.Tech - Computer Science and Engineering

M.Tech - Embedded Systems

M.Tech - Power Electronics

M.Tech - Thermal Sciences & Energy Systems

M.Tech - VLSI Design

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

B.Sc. - Neuro Electro Physiology

B.Sc. - Optometry (Regular)

B.Sc. - Optometry (Lateral Entry)

B.Sc. - Physician Assistant

B.Sc. - Respiratory Therapy

BASLP - Bachelor of Audiology and Speech Language Pathology

M.Sc. - Clinical Nutrition Foods & Sciences

M.Sc. - Medical Laboratory Technology (Biochemistry)

M.Sc. - Medical Laboratory Technology (Microbiology)

M.Sc. - Medical Laboratory Technology (Pathology)

**Amrita School of
Medicine, Kochi, Kerala**

2002

Kochi, Kerala

M.Sc. - Biostatistics

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 & Thoracic Surgery

MCh. Head and Neck Surgery

MCh. Neuro Surgery

MCh. Pediatric Surgery

MCh. Plastic & Reconstructive Surgery

MCh. Gynaecological Oncology

MCh. Reproductive Medicine

MCh. G I Surgery (Surgical Gastroenterology)

MCh. Urology

PG Diploma in Child Health (D.CH)

PG Diploma in Gynecology & Obstetrics (D.GO)

PG Diploma in Dermatology, Venerology and Leprosy (D.D.V.L.)

PG Diploma in Medical Radio Diagnosis (D.MRD)

PG Diploma in Ophthalmology (D.O.)

		PG Diploma in Psychological Medicine (D.PM)	
		PG Diploma in Otorhinolaryngology(D. L. O)	
		PG Diploma in Medical Radio-Therapy (DMRT)	
		PG Diploma in Medical Radiological Sciences	
		M.Phil Clinical Psychology	
		M.Phil Hospital Administration	
Amrita College of Nursing, Kochi, Kerala	2002	B.Sc. Nursing	Kochi, Kerala
		M Sc Nursing - Medical Surgical Nursing	
		M Sc Nursing -OBG Nursing	
Amrita School of Pharmacy, Kochi, Kerala	1997 / 2004	B.Pharm	Kochi, Kerala
		Pharm.D(Regular) 6 Year Course	
		M.Pharm - Pharmacy Practice	
		M.Pharm - Pharmaceutical Chemistry	
		M.Pharm - Pharmaceutics	
		M.Pharm - Pharmacology	
		Pharm.D(P.B) 3 Year Course	
		Ph.D	
Amrita School of Dentistry, Kochi, Kerala	2003	BDS	Kochi, Kerala
		MDS - Conservative Dentistry & Endodontics	
		MDS - Oral & Maxillofacial Surgery	
		MDS - Oral Medicine & Radiology	
		MDS - Oral Pathology & Microbiology	
		MDS - Orthodontics & Dentofacial Orthopedics	
		MDS - Pedodontics and Preventive Dentistry	
		MDS - Periodontology	
		MDS - Prosthodontics and Crown & Bridge	
		MDS - Public Health Dentistry	
		Diploma in Dental Mechanics	

		Ph.D	
Amrita School of Arts and Sciences, Kochi, Kerala	2003	B.Com - (Taxation & Finance)	Kochi, Kerala
		B.Com - Finance & IT - Computer Applications)	
		B.Sc. Visual Media	
		BBA - Logistics Management	
		BBA - Bachelor of Business Administration	
		B.F.A - Photography	
		MCA	
		MFA - (ACM) Animation and Content Management	
		MFA - (AAA) Applied Art and Advertising	
		MFA - (DFM) Digital Film Making	
		M.Com (Finance and Systems)	
		MJMC - Master of Journalism and Mass Communication	
		M.Sc Mathematics	
		M.A (VM&C) - Visual Media & Communication	
		M.A (CC & A) - Corporate Communication & Advertising	
		M.A - English Language and Literature	
		M.A. - Journalism and Mass Communication	
		M.A English and Languages (Integrated 5 Yr.)	
		MCA Integrated 5 Yr. Course	
		M.Sc.Maths Integrated 5 Yr. Course	
		M.Phil (Commerce & Management)	
		M.Phil (English Language & Literature)	
		M.Phil (Computer Science & IT)	
		M.Phil (Computer Science & IT) (Part Time)	
		M.Phil (Mathematics)	
		M.Phil (Visual Media & Communication)	
		M.Phil (Visual Media & Communication) - Part Time	
		Ph.D	

Amrita Centre for Nanosciences, Kochi, Kerala	2007	M.Tech - Molecular Medicine	Kochi, Kerala
		M.Tech - Nanomedical Sciences	
		M.Tech - Nanotechnology & Renewable Energy	
		M.Sc - Molecular Medicine	
		M.Sc - Nanomedical Sciences	
		M.Sc Nanoscience and Nanotechnology	
		Ph.D	
Mysore Campus			
Amrita School of Arts and Sciences, Mysore, Karnataka	2003	BBM - Bachelor of Business Management	Mysore, Karnataka
		BCA - Bachelor of Computer Applications	
		B.Com Regular - Bachelor of Commerce	
		B.Com Taxation - Bachelor of Commerce	
		B.Sc. Visual Media	
		BBA - Bachelor of Business Administration	
		B.Sc. - PCM	
		MCA	
		M.Com - Master of Commerce	
		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			

Table A.6

Note: Add rows as needed.

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

S. No.	Program Name	Name of the Department	Year of Start	Intake	Increase/ Decrease in intake, if any	Year of Increase/ Decrease	AICTE Approval	Accreditation Status*
1	B.Tech. - AEROSPACE ENGINEERING	AEROSPACE ENGINEERING	2007	60	Nil	Nil	F.No. Southern/1-707695364/2012/EOA Dated 10.05.2012 F.No. Southern/1-3516200899/2018/EOA Dated 04-Apr-2018	Eligible but not applied
2	B.Tech. - CIVIL ENGINEERING	CIVIL ENGINEERING	2008	69	Nil	Nil	F.No. Southern/1-414170221/2011/EOA Dated 01.09.2011 F.No. Southern/1-3516200899/2018/EOA Dated 04-Apr-2018	Eligible but not applied
3	M.Tech. - STRUCTURAL AND CONSTRUCTION ENGINEERING	CIVIL ENGINEERING	2014	30	Nil	Nil		Eligible but not applied
4	B.Tech. - CHEMICAL ENGINEERING	CHEMICAL ENGINEERING	2007	60	Nil	Nil	F.No. Southern/1-707695364/2012/EOA Dated 10.05.2012 F.No. Southern/1-3516200899/2018/EOA Dated 04-Apr-2018	Eligible but not applied
5	M.Tech. - MATERIALS SCIENCE & ENGINEERING	CHEMICAL ENGINEERING	2015	18	Nil	Nil		Eligible but not applied

6	B.Tech. - ELECTRICAL & ELECTRONICS ENGINEERING	ELECTRICAL & ELECTRONICS ENGINEERING	1994	40	Increase Intake - 20 + 60	<u>1996**</u> , 2014.	No. F 732-50- 9/RC/94 Dated 12.08.1994, ** Approval letter for Increase intake not available F.No. Southern/1- 2016442706/2014/ EOA Dated 04.06.2014 F.No. Southern/1- 3516200899/2018/ EOA Dated 04-Apr- 2018	Eligible but not applied
7	M.Tech - POWER ELECTRONICS	ELECTRICAL & ELECTRONICS ENGINEERING	2003	18	Increase Intake - 7 + 5	2005, 2018.	F.No.PG/TN/M.TEC H./2004/ECE-0078- 0057 Dated 25.06.2004, F.No.730-52- 203(E)/ET/97 Dated 19.09.2005, F.No. Southern/1- 3516200899/2018/ EOA Dated 04-Apr- 2018	Eligible but not applied
8	M.Tech - EMBEDDED SYSTEMS	ELECTRICAL & ELECTRONICS ENGINEERING	2008	24	Increase Intake - 6	2018	F.No. Southern/1- 707695364/20 12/EOA Dated 10.05.2012 F.No. Southern/1- 3516200899/2 018/EOA Dated 04-Apr- 2018	Eligible but not applied
9	M.Tech - CONTROL & INSTRUMENTATI ON ENGINEERING	ELECTRICAL & ELECTRONICS ENGINEERING	2016	18	-	-	-	Eligible but not applied
10	M.Tech - RENEWABLE ENERGY TECHNOLOGIES	ELECTRICAL & ELECTRONICS ENGINEERING	2014	18	-	-	-	Eligible but not applied

Table A.7

*** Write applicable one:**

Applying first time

- Granted provisional accreditation for two/three years for the period(specify period)
- Granted accreditation for 5/6 years for the period (specify period)
- Not accredited (specify visit dates, year)
- Withdrawn (specify visit dates, year)
- 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

9. Total number of employees:

A. Regular Employees (Faculty and Staff):

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

Table A.9a

Note: Minimum 75% should be Regular/Full Time faculty and the remaining 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 academic year on full time basis shall be considered for the purpose of calculation in the Student Faculty Ratio.

CAY – Current Academic Year

CAYm1- Current Academic Year minus1= Current Assessment Year

CAYm2 - Current Academic Year minus2=Current Assessment Year minus 1

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

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

Table A9b

10. Total number of Engineering Students:

Item	CAY 2018-19			CAYm1 2017-18			CAYm2 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 Year	0	0	0	23	0	23	2	0	2
Total	397	208	605	493	276	769	434	321	755

Table A.10

(Instruction: The data may be categorized in tabular form separately for undergraduate, postgraduate engineering, other program, if applicable)

Note: In case the institution is running programs other than engineering programs, a separate table giving similar details is to be included.

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:

- i. Name : **Dr. SASANGAN RAMANATHAN**
 Designation : DEAN
 Mobile No : 7598155285
 Email id : sasangan@amrita.edu

ii. **NBA coordinator, if designated**

- Name : **Dr. MAHADEVAN S**
 Designation : DEPUTY DEAN
 Mobile No : 9944312309
 Email id : s_mahadevan@cb.amrita.edu

PART B: Criteria Summary

Name of the program: B.Tech., - Electrical and Electronics Engineering

Criteria 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 Resources	120
	Total	1000

List of Abbreviations

CIR	Centre for Industrial Relations
AUMS	Amrita University Management System
TAG	Thrust Area Group
POs	Program Outcomes
COs	Course Outcomes
CAM	Course Articulation Matrix
PAM	Program Articulation Matrix
Inpods	Software used to compute attainment
NPTEL	National Programme on Technology Enhanced Learning
TBI	Technology Business Incubator
ThingQbator	Internet of Things and Incubator

PART B: Program Level Criteria

CRITERION 1	Vision, Mission and Program Educational Objectives	50
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1.1 State the Vision and Mission of the Department and Institute (5)

Vision of the Institute

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 of the Institute

- 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 of the Department

Mould generations of electrical and electronics engineers on global standards with multi disciplinary perspective to meet evolving societal needs.

Mission of the Department

- M1** Empower students with knowledge in electrical, electronics and allied engineering facilitated in innovative class rooms and state-of-the art laboratories.
- M2** Inculcate technical competence and promote research through industry interactions, field exposures and global collaborations.
- M3** Promote professional ethics and selfless service.

1.2 State the Program Educational Objectives (PEOs) (5)

PEO1:

Graduate can demonstrate electrical and electronics engineering problem solving skill along with proficiency in communication and professional excellence in project management and execution.

PEO2

Graduate can be employable in engineering services including ICT enabled sectors and also motivated for entrepreneurship.

PEO3

Graduate will be competent for higher studies in world class universities and research in industrial organizations.

PEO4

Graduate will manifest social commitment, environmental awareness and moral and ethical values in professional and other discourses.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (15)

- Available in University Website which is accessible to all
- Available in Intranet which can be accessed by the faculty, students and Parents.
- Printed in the Curriculum Book.
- As poster available at various places of the department like Chairperson Office, Laboratories, Department Notice Board and Faculty rooms.
- Explained to stakeholders during the induction program of the first years.
- Explained to the visitors of the department while making presentation about the department.
- Available in Work register and Course File.
- Available in Inpods which is accessible to students and faculty
- Lab Manuals
- Brochure of FDP/Workshop conducted by the department

1.4 State the process for defining the Vision and Mission of the Department and PEOs of the program (15)

Department mission, vision and PEO statements were originated from discussions among faculty, staff and students of the department. Then circulated it among alumni group and collected feedback from them. Before finalizing, it has been ensured that the tentatively defined department mission and vision statements are in correlation to that of the institute mission and vision statement.

The draft form of department vision, mission and PEO has been formulated by

1. Discussion among faculty , staff and students of the department
2. Consultation with senior Professors from other departments in the same university.
3. Consultation with eminent faculty and academicians (outside the university)
4. Consultation with the industrialists from nearby industries.
5. Consultation with the alumni of the department
6. Consultation with the parent community.

Further, all feedbacks were thoroughly discussed in the department meetings before finalizing. PEOs are further refined and improved based on the inputs of the various stakeholders. These include feedbacks from the external Academicians, students, alumni, and the faculty members which ensures that the PEOs are sustainable, and societal improvement is ensured through this.

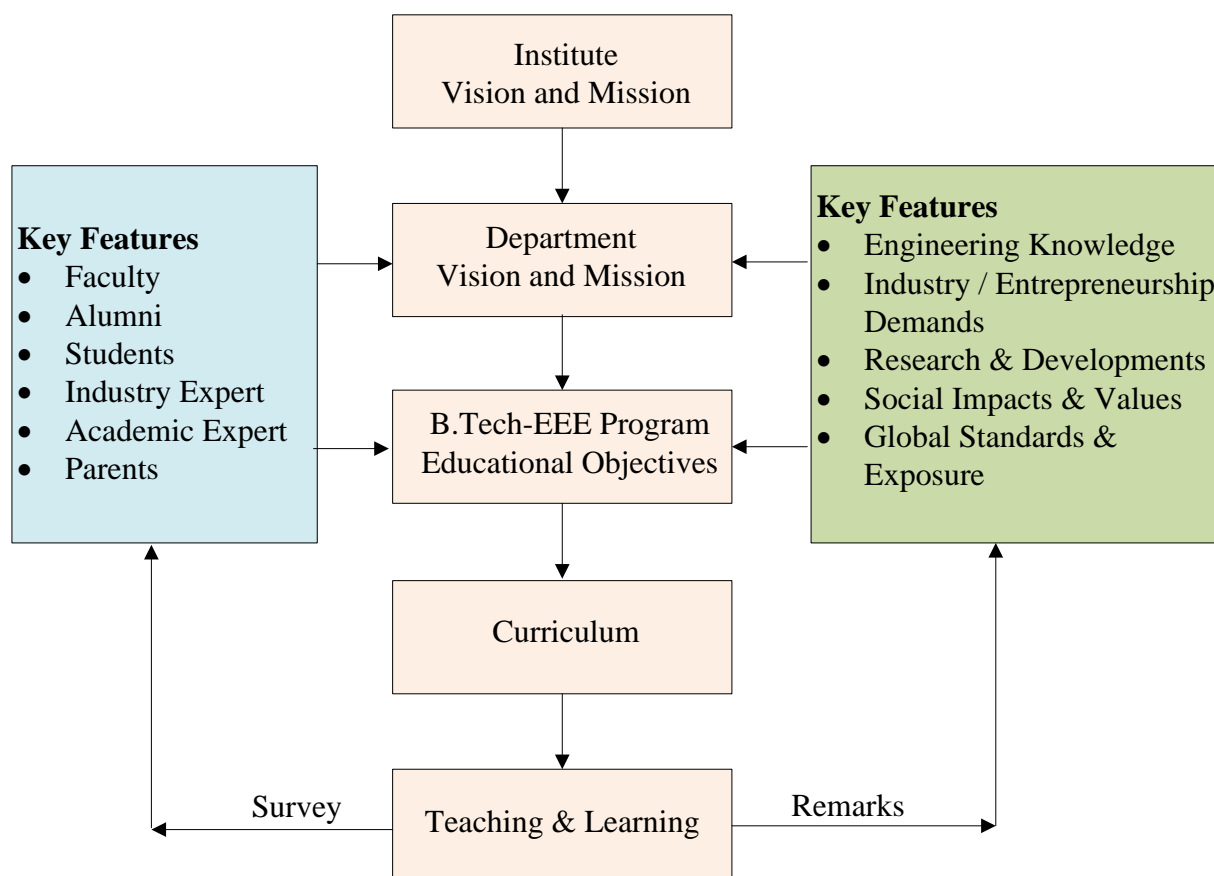


Figure B.1.4 Process for defining the Vision and Mission of the Department and PEOs of the program

1.5 Establish Consistency of PEOs with Mission of the Department (10)

PEO Statements	M1	M2	M3
PEO1: Graduate can demonstrate electrical and electronics engineering problem solving skill along with proficiency in communication and professional excellence in project management and execution.	3	2	1
PEO2: Graduate can be employable in engineering services including ICT enabled sectors and also motivated for entrepreneurship.	3	3	1
PEO3: Graduate will be competent for higher studies in world class universities and research in industrial organizations.	3	3	1
PEO4: Graduate will manifest social commitment, environmental awareness and moral and ethical values in professional and other discourses.	1	1	3

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

Justification:

- The proficiency and skill of the students (targeted in PEO1) are attained by empowering them with knowledge in the right facility (as stated in M1)
- Technical competence and exposure to field/industry globally (stated in M2) ensures employability as well as access to entrepreneurship (as aimed in PEO2)
- Competency for higher studies and research (targeted in PEO3) is also attained through empowerment and inculcation stated in M1 and M2.
- Orientation to ethics and service (stated in M3) helps manifestation of values aimed in PEO4.

CRITERION 2	Program Curriculum and Teaching-Learning Processes	100
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2.1 Program Curriculum (30)

2.1.1 State the process for designing the program curriculum (10)

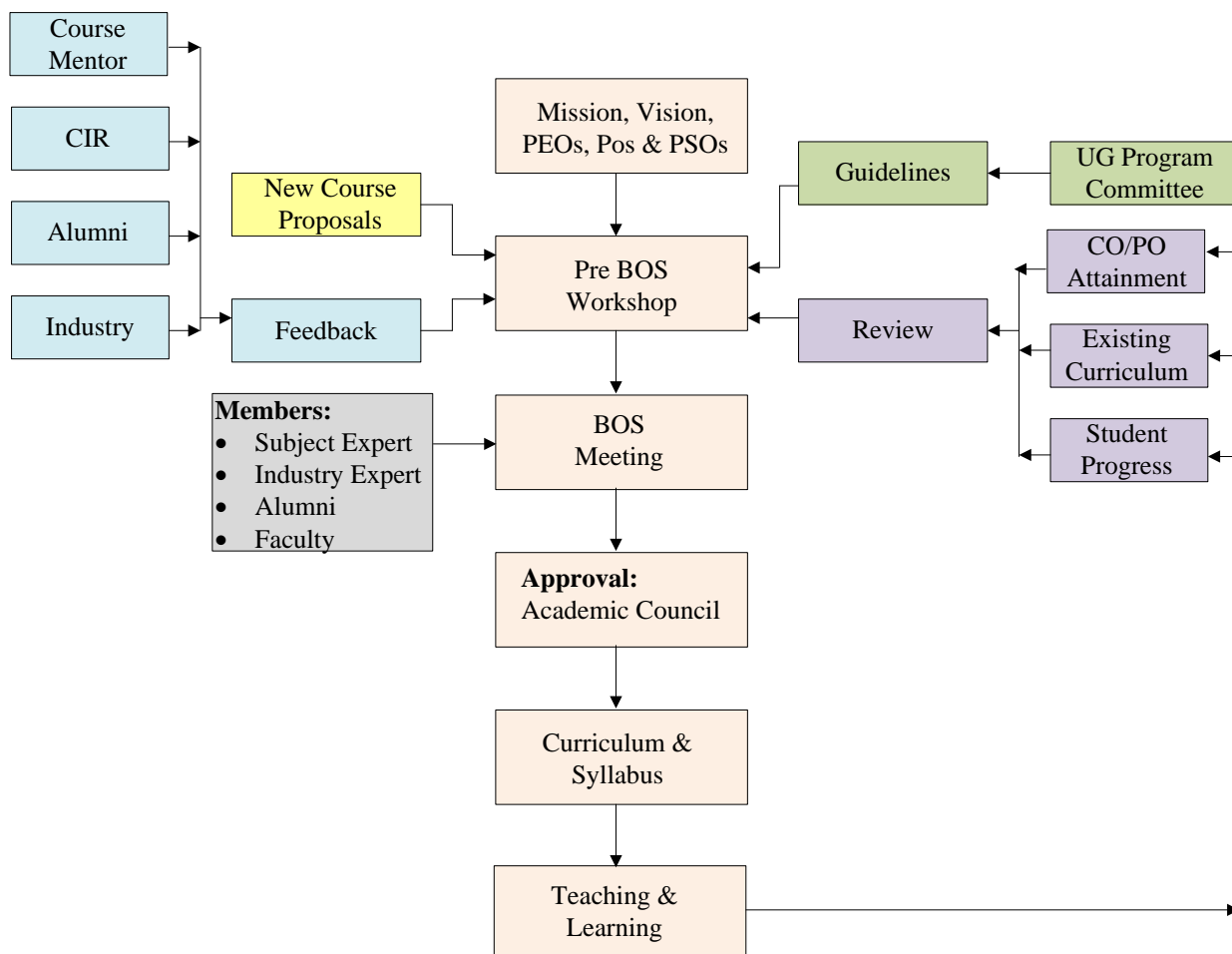


Figure B. 2.1.1 Process for designing the program curriculum

2.1.2. Structure of the Curriculum (5)

Table B.2.1.2a 2010 Curriculum

Course Code	Course Title	Total Number of contact hours				Credits
		Lecture (L)	Tutorial (T)	Practical# (p)	Total Hours	
Semester 1						
ENG111	Communicative English	2	0	2	45	3
CHY100	Chemistry	3	0	0	45	3
MAT111	Calculus, Matrix Algebra and ODE	3	1	0	60	4
EEE100	Electrical Engineering	3	0	0	45	3
CSE100	Computer Programming	3	0	0	45	3
MEC181	Engineering Drawing	1	0	3	30	2
CHY181	Chemistry Lab	0	0	3	45	1
MEC180	Workshop A	1	0	2	45	2
CSE180	Computer Programming Lab	0	0	3	45	1
CUL101	Cultural Education I	2	0	0	30	2
Semester 2						
ENG112	Technical Communication	2	0	2	45	3
PHY100	Physics	3	0	0	45	3
MAT112	Vector Calculus, Fourier Series and	3	1	0	60	4

	Partial Differential Equations					
ECE100	Electronics Engineering	3	0	0	45	3
MEC100	Engineering Mechanics	3	1	0	60	4
MEC182	Computer Aided Drawing	1	0	3	30	2
PHY181	Physics Lab	0	0	3	45	1
EEE180	Workshop B	1	0	2	45	2
CSE180	Computer Programming Lab	0	0	3	45	1
CUL102	Cultural Education II	2	0	0	30	2
Semester 3						
MAT211	Integral Transforms and Complex Analysis	3	1	0	60	4
EEE212	Electric Circuits	3	1	0	60	4
ECE210	Digital Systems	3	1	0	60	4
MEC209	Mechanical Engineering	4	0	0	60	4
	Science Elective I	3	0	0	45	3
	Humanities Elective I	1	0	2	30	2
EEE291	Simulation Lab and Electrical Workshop	1	0	3	45	2
EEE292	Electric Circuits Lab	0	0	3	45	1
Semester 4						
MAT212	Mathematical Statistics and Numerical Methods	3	1	0	60	4
EEE213	Electrical Measurements and Instrumentation	3	1	0	60	4
EEE221	Electrical Machines I	3	1	0	60	4
EEE222	Electromagnetic Theory	3	1	0	60	4
	Science Elective II	3	0	0	45	3
	Humanities Elective II	1	0	2	30	2
EEE293	Electrical Machines Lab I	0	0	3	45	1
EEE294	Measurements and Digital Circuits Lab	0	0	3	45	1
SSK111	Soft Skills I	0	0	3	45	1
Semester 5						
EEE311	Electronic Circuits	3	1	0	60	4
EEE321	Electrical Machines II	3	1	0	60	4
EEE331	Electrical Energy Systems I	3	1	0	60	4
ECE220	Signals and Systems	3	1	0	60	4
ECE310	Introduction to Microcontroller and Applications	3	1	0	60	4
EEE391	Electrical Machines Lab II	0	0	3	45	1
EEE392	Measurements and Analog Circuits Lab	0	0	3	45	1
SSK112	Soft Skills II	0	0	3	45	1
Semester 6						
EEE332	Electrical Energy Systems II	3	1	0	60	4
EEE341	Power Electronics	3	1	0	60	4
EEE342	Control Engineering	3	1	0	60	4
ECE221	Digital Signal Processing	3	1	0	60	4
	Elective I	3	0	0	45	3
EEE393	Electronic Circuits Lab	0	0	3	45	1
EEE394	Microprocessor and Microcontroller Lab	0	0	3	45	1
EEE397	Seminar	0	0	2	45	1
SSK113	Soft Skills III	0	0	3	45	1
Semester 7						
EEE431	Power System Protection and Switch Gear	3	0	0	45	3
EEE441	Electrical Drives and Control	3	1	0	60	4
ENV200	Environmental Studies	3	1	0	60	4
	Elective II	3	0	0	45	3
	Elective III	3	0	0	45	3
MNG400	Principles of Management	3	0	0	45	3
EEE491	Power System Simulation	0	0	3	45	1

	Lab					
EEE492	Power Electronics Lab	0	0	3	45	1
Semester 8						
	Elective IV	3	0	0	45	3
	Management Elective	3	0	0	45	3
EEE499	Project				450	10
Total		124	21	71	3570	181

Seminars, project works may be considered as practical

Table B.2.1.2b 2015 Curriculum

Course Code	Course Title	Total number of Contact Hours				Credits
		Lecture (L)	Tutorial (T)	Practical # (P)	Total Hours	
Semester 1						
15ENG111	Communicative English	2	0	2	45	3
15MAT111	Calculus and Matrix Algebra	2	1	0	45	3
15CSE100	Computational Thinking and Problem Solving	3	0	2	60	4
15CHY100	Chemistry	3	0	0	45	3
15CHY181	Chemistry Lab	0	0	2	30	1
15MEC180	Workshop A	0	0	2	30	1
15MEC100	Engineering Drawing – CAD	2	0	2	30	3
15CUL101	Cultural Education I	2	0	0	30	2
Semester 2						
15MAT121	Vector Calculus and Ordinary Differential Equations	3	1	0	60	4
15PHY100	Physics	3	0	0	45	3
15CSE102	Computer Programming	3	0	0	45	3
15EEE111	Fundamentals of Electrical and Electronics Engineering	4	0	0	60	4
15MEC111	Fundamentals of Mechanical Engineering	3	0	0	45	3
15PHY181	Physics Lab	0	0	2	30	1
15EEE180	Workshop B	0	0	2	30	1
15CSE180	Computer Programming Lab	0	0	2	30	1
15CUL111	Cultural Education II	2	0	0	30	2
Semester 3						
15EEE201	Analog Electronic Circuits	3	1	0	60	4
15EEE202	Electric Circuits	3	1	0	60	4
15EEE203	Electromagnetic Theory	3	1	0	60	4
15MAT203	Transforms and Complex Analysis	3	1	0	60	4
	Humanities Elective I				30	2
15EEE281	Electric Circuits Lab	0	0	2	30	1
15EEE282	Electronic Circuits and Simulation Lab I	0	0	2	30	1
15AVP201	Amrita Value Program I	1	0	0	15	1
Semester 4						
15EEE211	Analog Integrated Circuits	3	0	0	45	3
15EEE212	Electrical Machines I	3	1	0	60	4
15EEE213	Electrical Measurements	3	0	0	45	3
15MAT214	Probability and Statistics	2	1	0	45	3

	Humanities Elective II				30	2
15EEE285	Electrical Machines Lab I	0	0	2	30	1
15EEE286	Electrical Measurements Lab	0	0	2	30	1
15EEE287	Electronic Circuits and Simulation Lab II	0	0	2	30	1
15SSK221	Soft Skills I	1	0	2	45	2
15AVP211	Amrita Value Program II	1	0	0	15	1
Semester 5						
15EEE301	Control Systems	3	0	0	45	3
15EEE302	Digital Systems	3	0	0	45	3
15EEE303	Electrical Machines II	3	0	0	45	3
15EEE304	Signals and Systems	3	0	0	45	3
15ENV300	Environmental Science and Sustainability	3	0	0	45	3
15MEC305	Thermal Engineering and Fluid Machinery	3	0	0	45	3
15EEE381	Digital Systems and Signals Lab	0	0	2	30	1
15EEE382	Electrical Machines Lab II	0	0	2	30	1
15SSK321	Soft Skills II	1	0	2	45	2
15EEE390	Live-in-Lab					3*
Semester 6						
15EEE311	Digital Signal Processing	3	0	0	45	3
15EEE312	Electrical Energy Systems I	3	0	0	45	3
15EEE313	Power Electronics	3	0	0	45	3
15EEE314	Microcontroller and Applications	3	0	0	45	3
15MAT303	Optimization Techniques	2	1	0	45	3
	Elective I	3	0	0	45	3
15EEE385	DSP and Microcontroller Lab	0	0	2	30	1
15EEE386	Power Electronics Lab	0	0	2	30	1
15EEE387	Open Lab	0	1	2	30	2
15SSK331	Soft Skills III	1	0	2	45	2
Semester 7						
15EEE401	Electrical Drives and Control	3	1	0	60	4
15EEE402	Electrical Energy Systems II	3	1	0	60	4
	Elective II	3	0	0	45	3
	Elective III	3	0	0	45	3
15EEE481	Drives and Control Lab	0	0	2	30	1
15EEE482	Power Systems Lab	0	0	2	30	1
15EEE495	Project Phase I				30	2
15EEE490	Live-in-Lab					3*
Semester 8						
	Elective IV	3	0	0	45	3
	Elective V	3	0	0	45	3
15EEE499	Project				300	10
Total		110	12	46	2880	164

2.1.3. State the components of the curriculum (5)

Program curriculum grouping based on course components

Table B.2.1.3a Components of 2010 Curriculum

Course Component	Curriculum Content (% of total number of credits of the program)	Total number of Contact Hours	Total number of Credits
Basic Sciences	17.68	555	32
Engineering Sciences	21.00	645	38
Humanities and Social Sciences	14.92	495	27
Program Core	33.71	1200	61
Program Electives	6.63	180	12
Open Electives*	0	0	0
Project(s)	5.53	450	10
Internships/Seminars	0.55	45	1
Any Others (Please Specify)	0	0	0
Total		3570	181

*Optional electives are available but it is not in compulsory slot.

Table B.2.1.3b Components of 2015 Curriculum

Course Component	Curriculum Content (% of total number of credits of the program)	Total number of Contact Hours	Total number of Credits
Basic Sciences	15.24	405	25
Engineering Sciences	10.98	285	18
Humanities and Social Sciences	13.42	375	22
Program Core	42.68	1230	70
Program Electives	9.15	225	15
Open Electives*	0	0	0
Project(s)	7.32	330	12
Internships/Seminars	1.22	30	2
Others Live in Labs#	1.83*	45*	3*
Total		2880	164

#Optional elective for 3 credits *Optional electives are available but it is not in compulsory slot.

2.1.4. State the process used to identify extent of compliance of the curriculum for attaining program outcomes and program Specific Outcomes as mentioned in Annexure B.2-I (10)

Table B.2.1.4a Compliance of 2010 curriculum with POs and PSOs

Course Code	Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
SEMESTER 1															
ENG111	Communicative English								√	√	√		√		
PHY100	Physics		√												
MAT111	Calculus, Matrix Algebra and Ordinary Differential Equations	√	√												
EEE100	Electrical Engineering	√	√												
MEC100	Engineering Mechanics	√	√	√	√								√		
MEC181	Engineering Drawing	√	√	√	√		√				√		√		
PHY181	Physics Lab	√	√	√	√	√	√								
MEC180	Workshop A	√	√	√		√				√	√		√		
CSE180	Computer Programming Lab	√	√	√		√									
CUL101	Cultural Education I						√	√	√	√	√	√	√		
SEMESTER 2															
ENG112	Technical Communication								√	√	√		√		
CHY100	Chemistry	√	√	√	√										
MAT112	Vector Calculus, Fourier Series and Partial Differential Equations	√	√	√									√		
ECE100	Electronics Engineering	√	√	√									√		
CSE100	Computer Programming	√	√	√		√									
MEC182	Computer Aided Drawing	√	√	√	√	√	√				√		√		
CHY181	Chemistry Lab	√	√	√											
EEE180	Workshop B	√	√	√						√			√		
CSE180	Computer Programming Lab	√	√	√		√									
CUL102	Cultural Education II						√	√	√	√	√	√	√		
SEMESTER 3															
MAT211	Integral Transforms and Complex Analysis	√	√	√											
EEE 212	Electric Circuits	√	√	√	√	√									
ECE210	Digital Systems	√	√	√	√								√		√
MEC209	Mechanical Engineering	√	√	√											
PHY250	Science Elective I - Electrical Engineering Materials	√	√	√					√					√	
CHY 271	Science Elective I -- Electrochemical Energy Systems	√	√												
EEE291	Simulation Lab and Electrical Workshop	√	√	√		√			√	√					

EEE292	Electric Circuits Lab	√	√	√					√	√					
SEMESTER 4															
MAT212	Mathematical Statistics and Numerical Methods	√	√	√											
EEE213	Electrical Measurements and Instrumentation	√	√	√										√	
EEE221	Electrical Machines 1	√	√		√										
EEE222	Electromagnetic Theory	√	√		√									√	√
PHY250	Science Elective II - Electrical Engineering Materials	√	√	√					√					√	
CHY 271	Science Elective II – Electrochemical Energy Systems	√	√												
HUM 259	Humanities Elective II - Understanding Science of Food and Nutrition		√	√			√	√	√	√	√	√	√		
ENG 252	Humanities Elective II - Indian Thought in English						√		√					√	
HUM 252	Humanities Elective II - Glimpses of Eternal India						√		√	√	√	√	√	√	
HUM 257	Humanities Elective II - Psychology for Engineers						√	√	√	√	√	√	√		
EEE293	Electrical Machines Lab I	√	√						√	√					
EEE294	Measurements and Digital Circuits Lab	√	√	√					√	√					
SSK111	Soft Skill I		√		√				√	√	√			√	
SEMESTER 5															
EEE311	Electronic Circuits	√	√	√											
EEE321	Electrical Machines II	√	√												
EEE331	Electrical Energy System I	√	√	√	√										
ECE220	Signals & Systems	√	√			√				√					
EEE310	Introduction to Microcontroller and Applications	√	√	√	√									√	√
EEE391	Electrical Machines Lab II	√	√						√	√					
EEE392	Measurements and Analog Circuits Lab	√	√	√		√			√	√					
SSK112	Soft Skill II		√		√					√	√	√	√	√	
SEMESTER 6															
EEE332	Electrical Energy Systems II	√	√	√	√	√				√					√
EEE341	Power Electronics	√	√	√	√	√									√
EEE342	Control Engineering	√	√	√	√	√									
ECE221	Digital Signal Processing	√	√	√	√	√								√	
EEE393	Electronic Circuits Lab	√	√	√		√			√	√					
EEE394	Microprocessor And Microcontroller Lab	√	√	√		√			√	√				√	√
EEE397	Seminar	√	√	√	√	√	√	√	√	√	√	√	√	√	√
SSK113	Soft Skill III		√		√				√	√	√			√	
SEMESTER 7															
EEE431	Power System Protection And Switchgear	√	√	√											√

EEE441	Electrical Drives and Control	√	√	√										√	√
ENV200	Environmental Studies	√	√	√	√		√	√	√	√	√		√	√	√
MNG400	Principles of Management	√	√	√			√		√	√	√		√		
EEE491	Power System Simulation Lab	√	√	√	√	√			√	√				√	√
EEE492	Power Electronics Lab	√	√	√	√	√			√	√					√
SEMESTER 8															
EEE499	Project	√	√	√	√	√	√	√	√	√	√	√	√	√	√
ELECTIVES															
EEE351	Design of Electrical Apparatus	√	√	√	√	√			√					√	√
EEE352	Design of Electrical Systems	√	√	√	√				√					√	√
EEE353	Illumination Engineering	√	√	√	√		√	√						√	
EEE354	Electromagnetic Compatibility	√	√												√
EEE355	Industrial Electronics	√	√	√	√									√	√
EEE451	Power System Stability	√	√	√	√										√
EEE452	Renewable Energy and Energy Conservation	√	√	√	√			√							√
EEE453	Flexible AC Transmission Systems	√	√	√										√	√
EEE454	Power System Control	√	√	√	√	√								√	√
EEE455	High Voltage Engineering	√	√	√		√			√						√
EEE456	Special Electric Machines	√	√	√										√	√
EEE457	Utilization of Electric Energy	√	√	√			√							√	√
EEE458	Power Converters	√	√	√	√	√								√	√
EEE459	Network Synthesis	√	√	√											√
CSE380	IT Essentials	√	√	√					√					√	
EEE361	Power Plant Instrumentation	√	√	√	√										√
EEE461	Advanced Control Theory	√	√	√		√								√	√
EEE462	Digital Control Systems	√	√	√	√	√								√	√
EEE463	Process control and Instrumentation	√	√	√		√								√	√
EEE464	Optoelectronics and Laser Instrumentation	√	√	√		√				√				√	√
EIE413	Biomedical Instrumentation	√	√	√					√	√	√			√	√
EEE371	Advanced Microcontrollers	√	√	√	√	√								√	√
EEE372	Communication Engineering	√	√	√	√									√	√
EEE373	Introduction to Computer Networks	√	√											√	√
EEE471	Embedded Systems Design	√	√	√		√								√	√
EEE472	Fundamentals of Soft computing	√	√	√		√								√	√
EEE473	Digital Signal Processors	√	√	√										√	√
EEE474	Digital Image Processing	√	√	√	√	√				√				√	√
EEE456	Special Electric Machines	√	√	√	√									√	√
EEE480	Power System Management	√	√	√			√					√		√	√
EEE481	Energy Management and IT Applications	√	√	√			√		√					√	√
EEE482	Management of Power Distribution	√	√						√	√	√	√		√	√

Table B.2.1.4b Compliance of 2015 curriculum with POs and PSOs

Course Code	Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
SEMESTER 1															
15ENG111	Communicative English								√	√	√		√		
15MAT111	Calculus and Matrix Algebra	√	√												
15CSE100	Computational Thinking and Problem Solving	√	√	√		√	√		√	√	√				
15PHY100	Physics	√	√												
15PHY181	Physics Lab	√	√	√	√	√	√								
15EEE180	Workshop B	√	√	√						√			√		
15MEC100	Engineering Drawing –CAD	√	√	√	√	√	√	√	√	√	√	√	√	√	
15CUL101	Cultural Education I						√	√	√	√	√	√	√	√	
SEMESTER 2															
15MAT121	Vector Calculus and Ordinary Differential Equations	√	√												
15CHY100	Chemistry	√	√	√	√										
15CSE102	Computer Programming	√	√	√		√									
15EEE111	Fundamentals of Electrical and Electronics Engineering	√	√	√											
15MEC111	Fundamental of Mechanical Engineering	√	√	√	√		√	√		√			√		
15CHY181	Chemistry Lab	√	√	√											
15MEC180	Workshop A	√	√	√		√				√	√		√		
15CSE180	Computer Programming Lab	√	√	√		√									
15CUL111	Cultural Education II						√	√	√	√	√	√	√	√	
SEMESTER 3															
15EEE201	Analog Electronic Circuits	√	√	√		√									
15EEE202	Electric Circuits	√	√	√	√	√									
15EEE203	Electromagnetic Theory	√	√		√									√	√
15MAT203	Transforms and Complex Analysis	√	√		√										
15HUM234	Humanities Elective I - Health and Life Style		√	√			√	√	√	√	√	√	√		
15EEE281	Electric Circuits Lab	√	√	√					√	√					
15EEE282	Electronics Circuits and Simulation Lab I	√	√	√		√			√	√				√	
15AVP201	Amrita Values Programme I						√		√	√	√	√	√	√	√
SEMSTER 4															
15EEE211	Analog Integrated Circuits	√	√	√		√								√	
15EEE212	Electrical Machines 1	√	√		√										
15EEE213	Electrical Measurements	√	√	√										√	
15MAT214	Probability and Statistics	√	√												
15HUM 244	Humanities Elective II – Understanding Science of Food and Nutrition		√	√			√	√	√	√	√	√	√		
15HUM257	Humanities Elective II – Psychology for Engineers						√	√	√	√	√	√	√		

15EEE285	Electrical Machines Lab I	√	√						√	√					
15EEE286	Electrical Measurements Lab	√	√			√			√	√					
15EEE287	Electronic Circuits and Simulation Lab II	√	√	√	√	√			√	√				√	
15SSK221	Soft Skill I		√		√				√	√	√		√		
15AVP211	Amrita Values Programme II						√		√	√	√	√	√	√	√
SEMSTER 5															
15EEE301	Control Systems	√	√	√	√	√									
15EEE302	Digital Systems	√	√	√	√										
15EEE303	Electrical Machines II	√	√												
15EEE304	Signals & Systems	√	√												
15ENV300	Environmental Science and Sustainability	√	√	√	√		√	√	√	√	√		√		
15MEC305	Thermal Engineering and Fluid Machinery	√	√	√											
15EEE381	Digital systems and signals lab	√	√	√		√			√	√				√	
15EEE382	Electrical Machines Lab II	√	√						√	√					
15SSK321	Soft Skill II		√		√					√	√	√	√	√	
15EEE390	Live In Labs	√	√	√	√	√	√	√	√	√	√	√	√	√	
SEMSTER 6															
15EEE311	Digital Signal Processing	√	√	√	√	√								√	
15EEE312	Electrical Energy Systems I	√	√	√	√										√
15EEE313	Power Electronics	√	√	√	√	√									√
15EEE314	Microcontroller and Applications	√	√	√	√								√	√	
15MAT303	Optimization Techniques	√	√	√											
15EEE385	DSP and Microcontroller Lab	√	√	√		√			√	√				√	√
15EEE386	Power Electronics Lab	√	√	√	√	√			√	√					√
15EEE387	Open Lab	√	√	√	√	√			√	√	√	√	√	√	√
15SSK331	Soft Skill III		√		√				√	√	√		√		
SEMESTER 7															
15EEE401	Electrical Drives and Control	√	√	√										√	√
15EEE402	Electrical Energy Systems II	√	√	√	√	√								√	
15EEE481	Drives and Controls Lab	√	√	√		√			√	√				√	√
15EEE482	Power Systems Lab	√	√	√	√	√			√	√				√	√
15EEE495	Project Phase I	√	√	√	√	√	√	√	√	√	√	√	√	√	√
15EEE490	Live In Lab	√	√	√		√	√	√	√	√	√	√	√		
SEMESTER 8															
15EEE499	Project Phase II	√	√	√	√	√	√	√	√	√	√	√	√	√	√
ELECTIVES															
15EEE330	Advanced Control Systems	√	√	√	√	√								√	√
15EEE331	Advanced Microcontrollers	√	√	√	√	√								√	√
15EEE332	Communication Engineering	√	√	√	√									√	√

15EEE333	Deregulated Power System	√	√				√						√	√
15EEE334	Design of Electrical Apparatus	√	√	√	√	√			√				√	√
15EEE335	Design of Electrical Systems	√	√	√	√				√				√	√
15EEE336	Digital Control Systems	√	√	√	√	√							√	√
15EEE337	Digital Image Processing	√	√	√	√	√				√			√	√
15EEE338	Digital Signal Processors	√	√	√									√	√
15EEE339	Electrical Safety	√	√				√		√				√	√
15EEE340	Electromagnetic Compatibility	√	√											√
15EEE341	Embedded Systems Design	√	√	√		√							√	√
15EEE342	Flexible AC Transmission Systems	√	√	√									√	√
15EEE343	Fundamentals of Soft Computing	√	√	√		√							√	√
15EEE344	High Voltage Engineering	√	√	√		√			√					√
15EEE345	Illumination Engineering	√	√	√	√		√	√					√	
15EEE346	Industrial Electronics	√	√	√	√								√	√
15EEE347	Introduction to Computer Networks	√	√										√	√
15EEE348	Management of Power Distribution	√	√			√	√						√	
15EEE349	Network Synthesis	√	√	√										√
15EEE350	Optoelectronics and Laser Instrumentation	√	√	√		√				√			√	√
15EEE351	Power Converters	√	√	√	√	√							√	√
15EEE352	Power Plant Instrumentation	√	√	√	√									√
15EEE353	Power Quality	√	√			√							√	√
15EEE354	Power System Management	√	√	√			√					√	√	√
15EEE355	Power System Protection and Switchgear	√	√	√									√	
15EEE356	Power System Stability	√	√	√	√									√
15EEE357	Power System Operation, Control and Stability	√	√	√		√							√	√
15EEE358	Process Control and Instrumentation	√	√	√		√							√	√
15EEE359	Renewable Energy and Energy Conservation	√	√	√	√			√						√
15EEE360	Smart Grid	√	√			√	√						√	√
15EEE361	Special Electric Machines	√	√	√	√								√	√
15EEE362	Utilization Of Electric Energy	√	√	√			√						√	√
15CSE330	Information Technology Essentials	√	√	√					√				√	
15ECE315	Bio-medical Instrumentation	√	√	√					√	√	√		√	√
15ECE373	VLSI System Design	√	√	√		√							√	√

2.2 Teaching Learning Process (70)

EVALUATION			Time Axis	TEACHING & LEARNING		
					Mode	Person
				Course Allotment	Google Form	Chairperson Time Table Coordinator
			Previous Sem Ends			
				Course Registration	AUMS	Students
				Course Endorsement	AUMS	Class Advisor Dept. Acad. Coordinator
				Time Table	AUMS	Chairperson Time Table Coordinator
					Intranet	
			Sem Starts			
			Term 1	Commencement of Classes		
				Lecture Plan	Printed	Chief Mentor
Mode					Work Register	Course Mentor
Work Register	Class Room	Continuous Evaluation				
AUMS						
Work Register	COE	Periodicals 1				
AUMS						
			Term 2	Attendance	AUMS	Course Mentor
					Work Register	
Work Register	COE	Periodicals 1				
AUMS						
Work Register	Class Room	Continuous Evaluation				
AUMS						
Work Register	COE	Periodicals 2				
AUMS			Term 3	Class Committee Meeting 1	Hall	Chairperson Class Coordinator Class Advisor Faculty Students
Work Register	Class Room	Continuous Evaluation				
AUMS						
Work Register	COE	Periodicals 2				
AUMS						
Work Register	Class Room	Continuous Evaluation				
AUMS						
Work Register	COE	Periodicals 3				
AUMS						
Work Register	Class Room	Continuous Evaluation		Student Feedback	AUMS	Class Advisor Course Mentor
AUMS						
			Sem Ends	Course End		
Work Register	COE	End Semester				
AUMS						
				Class Committee Meeting 3	Hall	Chairperson Class Coordinator Class Advisor Students Faculty
AUMS	COE	Announcement of Results				

Figure B.2.2 Teaching-Learning processes

2.2.1 Describe process followed to improve quality of Teaching and Learning

The department is having a systematic procedure for improving the Teaching learning process which shows step by step improvement in quality of teaching and hence an improvement in the students' performance. Subject allotment for each subject will take place in the previous semester as per the faculty choice so that the faculty members can get enough time to plan their pedagogical approach for the subject. Each course, there will be a course mentor. Faculty who is handling the subject along with the course mentor will plan a detailed course plan based on the academic calendar prepared and distributed by the Institution. The course plan incorporates the details of the topics covered in each lecture our, portions to be covered before each periodicals, number of tutorials to be conducted and, the number of hours needed for completing each topic. A detailed assessment plan for continuous evaluation also will be explained which carries 50% weightage in total marks.

Every teacher prepares lecture notes and other course materials for the subjects allotted to them. For each course, course committee is formed. Course committee meetings are arranged periodically to review the coverage of syllabus in the respective semesters and suitable corrective measures are adopted to complete the syllabus within the stipulated time.

For each lab course, before starting the semester, all the faculty members handling that lab will plan the evaluation scheme and most of the times, will try to incorporate a new experiment in each. Lab manuals are prepared well in advance and all lab manuals will be thoroughly scrutinized by the mentor of the respective lab and if it is required, FDP will be conducted for the same course. For each lab, every batch will be completing a mini project based on what they learnt in that laboratory course at the end of the semester as a part of their continuous evaluation which carries maximum weightage. To expose the students to deal with real world examples, students are encouraged to go for industrial visits. The students also get a chance to go for industrial training, which would help them to get acquainted with real world examples.

Our institution is chosen to be one of the participating institutions in Quality Enhancement in Engineering Education (QEEE) program of Department of Higher Education, MHRD, Government of India, since 2014. Under this program, the facilities have been for participating in the Live Classes offered by IIT Professors in core areas of Electrical Engineering. Faculty members along with students will be attending these courses, which will enhance the quality of teaching.

a) **Maintenance of course files** Each and every faculty in the department should maintain a separate course file for theory, practical, project and seminar courses they handle. It contains the complete details of the course handled by them such that the course plan, assignments, internal tests, details of students performance, attendance reports etc. The course file will have a check list to ensure that all the necessary records are included. All course files will be monitored by the Chairperson, and compliance of the teaching-learning practices in line with the academic calendar is validated. The course progress is closely monitored by the Department Chairperson

b) **Academic Audit**

An academic audit is done by experts assigned by University in every semester. Faculty from other Amrita Campuses come and do the auditing and submit an audit report to the Controller of Examinations. All question papers are reviewed by a subject expert within the department and Chairperson before submitting to the controller of Examinations. If more than one batch of course exists, a round robin correction of answer sheets is insisted.

c) **Student feedback via class and course committee**

There is a class committee for every batch of students. This is a forum where students can interact freely with the department. This committee consists of Chairperson of the department, Faculty advisors and a random sample of student representatives belonging to bright, average and below average students. Every semester three class committee meetings are scheduled. The first one is after two weeks of commencing the semester, second meeting before second periodical Exam and third is the grade finalization meeting. The committee monitors the progress of the subjects covered in the semester, pays attention to the grievances put forward by the student representatives, take stock of the class attendance and analyses marks scored by the students for the internal examinations. Based on these, the committee suggests corrective actions such as remedial coaching, feedback to faculty members etc. For every course, there is a course committee, consisting of the HOD, staff advisor of the student-batch who credits the course, the faculty member handling the course, and student representatives. The committee meets to monitor the effectiveness of teaching learning process.

The department is keen to motivate and encourage bright students in each class. The best outgoing student award is given to the best student in the final year at the end of each semester.

d) **Use of Various Instructional Methods and Pedagogical Initiatives (4)**

Classroom based teaching plays an important role. Most of the UG courses are based on classroom teaching. Practical exposure is essential for some courses. In such cases, case studies and mini projects are proposed where the students can have a real understanding of the subjects. Apart from this,

assignments and seminars give them a platform to improve themselves. Self-learning is also promoted in certain areas. Content of theory and practical subjects are based on the syllabus approved by the Academic council. For classroom teaching, teachers use lecture notes as well as power point presentations or sometimes simulation tools. Students are provided with the teaching materials when and where needed. For most of the subjects, the teachers use online course material from NPTEL and students are also provided with the same. This institute is registered as a local chapter of NPTEL for conducting online certification courses. The institute has campus management software named AUMS for recording of attendance, periodical test marks etc. Academic instructions, teaching materials, previous question papers, assignments are also shared in AUMS and accessed by students. Students can login to AUMS and track their attendance and also all academic details. There is a parent portal where parents can register and they can monitor the progress of their ward. InPods is used for conduction of online tests and quizzes where students are provided with login. It helps to conduct online assignments and quizzes for individual evaluation. Along with lecture sessions, practical hours are also provided as part of the time table. Students carry out experiments specified in the syllabus, which are evaluated continuously. Laboratory manuals are made available for the students. Teacher gives guidelines on the conduct of each experiment and each student is being evaluated based on different criteria. Students undertake high quality mini projects through continuous monitoring by faculty. The main strategies used to make the teaching more effective are:

1. Pedagogical Methods
2. ICT Enabled classes
3. Regular Lectures , tutorials and assignments
4. Project based learning
5. Activity based learning

Pedagogical Initiatives

1. Live In Labs:

Students go to the villages throughout India during vacation. They will identify their problems and propose technical solutions to it. This will even leads to research publications. The work will be evaluated and it will be considered as a substitute for 3 credit elective course.

2. Open Lab:

Based on the knowledge acquired till the end of fifth semester, the students have to develop a set up or model with the resources available in the department. Their progress is monitored continuously.

3. Power Systems Lab:

The EEE department is offering the Power Systems Lab as hardware based lab.

4. Soft Skill:

To improve the aptitude, verbal and comprehensive skill, three soft skill courses are introduced. This supports them to get placed in engineering firms. Moreover, the skill thus acquired helps students to perform better in the competitive exams.

5. Amrita Value Programmes:

Amrita Value programs are introduced to make the students a good human being which will make them to serve the society as a responsible individuals.

6. Mini Project in Laboratory Courses:

Apart from the regular experiments, students has to take a mini project for the lab. On successful completion, they will demonstrate the work done for evaluation.

7. Simulation Studies in Theory Courses

In many of the theory courses, the respective simulation tools are taught. This makes the students to understand the concept in a better way. The Course and the Simulation tools are

Course	Simulation Tool
Electrical Energy Systems 1	MATLAB
Electrical Energy Systems 2	ETAP, PSCAD, MATLAB Simulink
Electric Circuit Theory	MATLAB
Power Electronics	MATLAB, SPICE

Design of Electrical Systems	ETAP
Power System Protection and Switchgear	MATLAB
Power System Operation and Control	MATLAB
Microcontroller and its Applications	MPLAB IDE, PROTEUS
Embedded System Design	Keil IDE
Analog Electronic Circuits	MultiSim
Analog Integrated Circuits	MultiSim, SPICE

8. Digital Image Processing

- All lectures were given using ppt. Towards end of each ppt, relevant video lecture links from Duke University were given. This will serve two-purpose. The student can hear those lectures post-classroom whenever he is going through the slides. This also boosts the student's learning experience as we are teaching global level standards syllabus.
- The course is 3 credits lecture course. However, I have given Matlab Image processing toolbox based assignments almost every fortnight. The tasks were to reproduce the figures given in the Reference textbook. This way the student will learn validation of different techniques taught from the reference book and also get fluent in using the software skills for further studying of any advanced courses/projects based on this course.
- There was a term paper component. The students gave presentation on slightly new topic from the Reference textbook, but not covered by the instructor. While preparing for the presentation topic, the students will learn how to use the classroom knowledge to learn any new topic in relevant field.

Methodologies to Support Weak Students and Encourage bright students

1. Weak Students

To support the week students, the following types of classes are conducted

- Run time redo
- Vacation courses
- Contact Courses
- Re-registration
- 8th hour is for weak students to interact with faculty.

Using these classes, the students can clear their backlogs.

2. Bright Students

- Bright Students can complete their 8th semester subjects in fast track mode and can go to industry to do internship for a semester.
- Department has MOU with foreign universities. The bright students can use this opportunity and can do their project abroad.
- The rank holders are encouraged by displaying their name and photograph in all the notice board of the university. They are given cash awards during Institution day.
- The bright students are awarded as Best Outgoing students, All Rounder and Best Sport Person every year by the department.
- Summer internship is offered to the bright students by the department

Students Feedback of teaching learning process

- Students will give feedback about their course and faculty for all their registered course through AUMS. The feedbacks are converted to percentage of marks and is shared with the faculty through faculty portal.

Refer : Annexure B.2-II

- In class committee meeting, feedback will be collected about each class and recorded. Faculties are informed personally by the chairperson.
- Periodically, the batch coordinator will collect written feedback from the students for all the courses. Appropriate action will be taken by the chairperson.

2.2.2 Quality of end semester examination, internal semester question papers, assignment and evaluation

After every test, conducted in 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 provides consolidated information as bar chart. The following items can be analyzed through the bar chart

1. **Syllabus Coverage in each exam**
2. **BTL of the question paper – Quality of the question paper**
3. **Performance of the students across the class**

The sample bar charts are given below

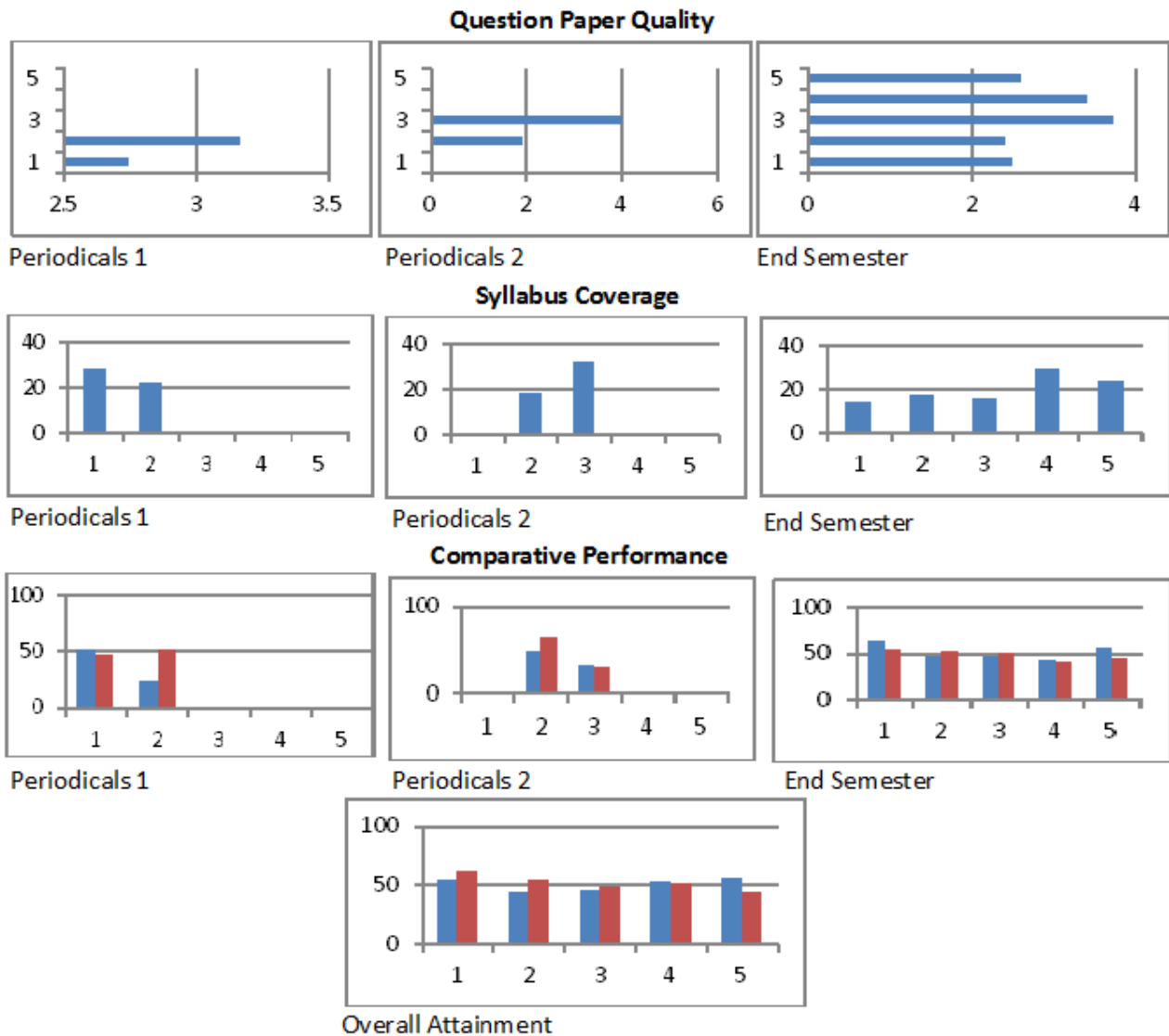


Figure B.2.2.2 Quality of internal and external assessment

2.2.3 Quality of student projects

Identification of projects and allocation methodology to faculty members

Great emphasis is given on student project. Student project is 12 credits with two credits for Phase 1 in 7th semester and 10 credits in phase 2 in eighth semester. The theoretical knowledge and practical skill of our Engineering students are revealed through the student project. . The grouping of the student begins by the end of sixth semester. They are asked to group having a maximum number of 4 in each group. All the thrust area groups in the department will discuss in the group and prepare a list of projects to be given to the students well in advance and will circulate in the class group. Students can select any topic from that list or can identify any other topic for project work. The groups are encouraged to discuss with faculty members and refer journals and senior student’s project reports. Usually this exercise takes about one month. By this time the students discuss among themselves about the theoretical and practical aspects of the project work. After finalization of the topic each group is asked to write a report showing the statement of purpose of the project work, time frame of the implementation, expected outcome of the project work along with the reference material. This will be presented in front of a project review committee in the department deputed by the Chairperson. Based on this the project will be finalized and will be allotted to faculty members.

In seventh semester, students will do all preliminary work like design, mathematical simulation, list of materials to be purchased, cost estimate, availability of material etc during seventh semester and by eighth semester they start implementing the hardware. A committee of faculty members makes three assessments during seventh semester. Each group of students presents the progress of the work, their theoretical knowledge of the work. These are verified with the time frame given by the students. If some mid-course correction is necessary in their work, it is suggested during these assessments. Individual student evaluation for basic understanding, communication, skill, and comprehension. Group evaluation for project implementation and report preparation. Award of marks through discussion by review committee members and guide. Similar two assessments are made during eighth semester. If the students want to work in extra time laboratories are kept open during late night also. The project report is written by the students in the format prepared by the university. At the end of eighth semester the student project work is assessed through a viva voce examination in which an internal examiner and external examiner from other university will be present. The students take project work very seriously and feel proud about their project work. The communication skill both oral and written is considerably improved by the exercise. Students get to know how to plan their project work, what are the obstacles likely to come while executing a project work which is training for them for their future career development. Young faculty members doing research are able to use the student's intellectual capability and organization skill to accelerate their research work. A good rapport takes place between students and their project supervisor.

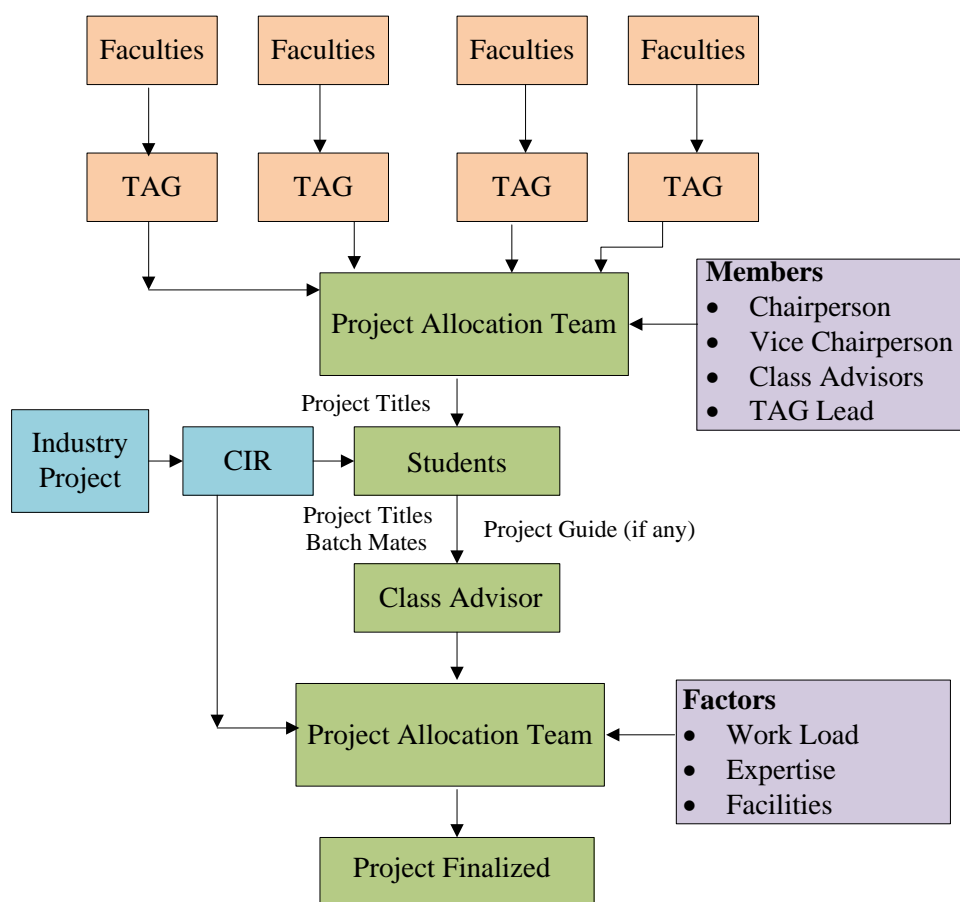


Figure B2.2.3a Process of project allocation

Types of relevance of the projects and their contribution towards attainment of POs and PSOs; Process of Monitoring and Evaluation

Table B.2.2.3 Project evaluation based on CO-PO/PSO Mapping

	CO3	CO1	CO3, CO4	CO1	CO3,CO5	
Review No.	Communication(10) (PO10)	Project Progress/ Implementation (15) (PO2/3/4) (PSOs)	Report(5) (PO8, PO9)	Basic Understanding (15) (PO1)	Guide (15) (PO 8/9/12)	TOTAL (60)
R1	Applying	Evaluating	Applying	Understanding	Analyzing	

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

	CO3	CO1	CO3,CO4	CO1	CO5	CO3,CO5	
Review No.	Communication (10) (PO10)	Project Progress/ Implementation(15) (PO2/3/4) (PSOs)	Report (5) (PO8,PO9)	Basic Understanding (10) (PO1)	Skill (5) (PO5/12) (PSOs)	Guide (15) (PO 8/9/12)	Total (60)
R3	Applying	Evaluating	Applying	Understanding	Apply	Analyzing	

	CO3	CO1	CO3,CO4	CO1	CO5	CO3,CO5	
Review No.	Communication (10) (PO10)	Project Progress / Implementation(15) (PO2/3/4) (PSOs)	Report (5) (PO8,PO9)	Basic Understanding (10) (PO1)	Skill (5) (PO5/12) (PSOs)	Guide (15) (PO 8/9/12)	Total (60)
R4	Applying	Evaluating	Applying	Understanding	Apply	Analyzing	

	CO1	CO1	CO5	CO2	CO5	CO3,CO4	CO5	
Review No.	Basic Understanding (5) (PO1)	Project Implementation (10) (PO2/3/4) (PSOs)	Skill (5) (PO 5)	Project Management (5) (PO11)	Social Responsibility/ Novelty (5) (PO6/7)	Report (5) (PO8,PO9)	Comprehension (5) (PO12)	Total (40)
INT	Understanding	Evaluating	Apply	Analyzing	Apply/Creating	Applying	Evaluating	

	CO1	CO1	CO5	CO2	CO5	CO3,CO4	CO5	
Review No.	Basic Understanding (5) (PO1)	Project Implementation (10) (PO2/3/4) (PSOs)	Skill (5) (PO 5)	Project Management (5) (PO11)	Social Responsibility/ Novelty (5) (PO6/7)	Report (5) (PO8,PO9)	Comprehension (5) (PO12)	Total (40)
EXT	Understanding	Evaluating	Apply	Analyzing	Apply/Creating	Applying	Evaluating	

Projects related to Industry

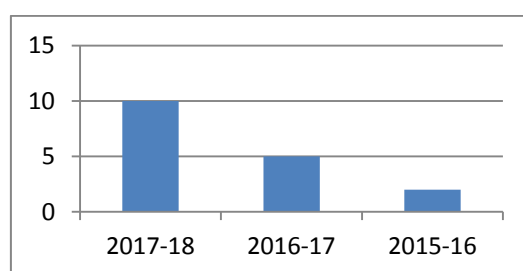


Figure B.2.2.3b Number of projects related to industry

Paper published

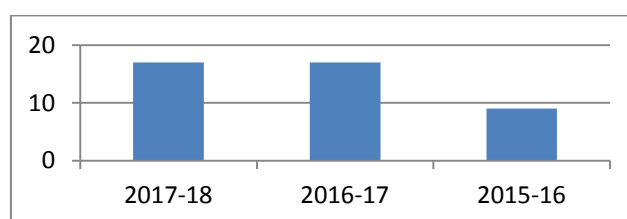


Figure B.2.2.3c Number of papers published

2.2.4. Initiatives related to industry interaction

Industry supported laboratories

- **Microsoft** has supported the EEE department in developing the embedded system laboratory
- **C-Wet** has supported the EEE department in developing the Renewable Energy Laboratory
- **CISCO – thingQbator:** The name “thingQbator” is a combination of ‘Internet of Things’ and ‘Incubator’. ThingQbator was started as an internal incubator of IoT ideas coming from Cisco’s engineer community. The objective of the program was to create makerspaces where IoT enthusiasts could learn more about digital technologies in a hands on environment and turn their ideas into working prototypes. Inspired by the success of our internal makerspaces Cisco has come up with the concept of “thingQbator for Universities” to help universities and academic institutions to set up IoT makerspaces to help them accelerate innovation around IoT and digital technologies in their campus. Amrita Vishwa Vidyapeetham is one of the 5 universities in India to get the thingqbator set up and one cohort has already been completed with 22 batch of students. Second cohort is underway with 22 more batches. The lab has the smallest of the sensor to the most sophisticated 3D printers. Also, the lab has all the components that a student needs to prototype his/her idea.
- **Amrita TBI :** Amrita TBI is a non-profit startup incubator supported by Govt. of India and Amrita Vishwa Vidyapeetham that funds, mentors and nurtures ideas, startups and entrepreneurs. Virtual incubatees can operate from anywhere in India. Amrita TBI runs a scaled incubator program that incubates and accelerates startups that are in idea stages and growth stages.

Industry Involvement in the Program Design and Curriculum

The companies which are coming for placement will give feedback after their recruitment. They inform us the need of the industry, expectations from the engineers and our student performance. Based the input, the curriculum revision happens. Apart from the above inputs, we have industry person in our Board of Studies. The BOS Member (Industry) for 2015 regulation is

Mr. A.D.Thirumoorthy

President at Coimbatore Solar Energy Solutions Private Limited

Experience: Member, Testing and Research committee at SITARC, Coimbatore

SE at TNEB

Ph: +91 9965549894

Industry involvement in partial delivery

The company, KPIT had organized Faculty Development Programs on

1. Automotive Electronics

Duration: 3-6th [Nov 2015](#)

Latest trends in Automotive Electronics were discussed by the Company experts. Various real time models were showed as demo for the faculty to get the feel of the products. The FDP gave an overall idea about the domains like Body Electronics, Chasis Electronics, Infotainment Systems, Power Train Systems and various other modules present in a modern car.

2. AUTOSAR

Duration: 28-30th [Dec 2015](#)

Hands on experience was given on using the software, K-SAR by KPIT towards a small ECU software development based on AUTOSAR standards. This helped the faculty in understanding various modules present in AUTOSAR standards.

3. Delta Power Solutions India Private Limited:

EEE department has signed a MOU with Delta Power Solutions India Private Limited to train our students in the Course Analog Electronics.

4. ICAR – Indian Council of Agricultural Research:

- a. Joint educational, training and/or research activities
- b. Exchange of information in fields of interest to both parties
- c. Exchange of faculty, research personnel, post graduate and under graduate students for the purpose of research as per existing norms of both the parties.
- d. Practical training in pre-identified or otherwise selected field site as per existing norms of both the parties.

2.2.5 Initiatives related to Industry internship/summer training

S. No	Name of the Student	Company Details	Period	
			From	To
1	KANDUKURI ANIKETH	NARLA TATA RAO THERMAL POWER STATION (VTPS) APGENCO	14-05-2018	26-05-2018
2	ANJALI SURESAN	EMERSON PROCESS MANAGEMENT INDIA PVT. LTD	7-05-2018	7-06-2018
3	B.DEV ANANDH	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
4	DIVYAA MAHALAKSHMI G	SCHNEIDER ELECTRICS PVT. LTD.,	15-05-2018	5-05-2018
5	B.K HARIE VIGNESH	ULTRATECH CEMENTS LIMITED	15-05-2018	24-05-2018
6	B.K HARIE VIGNESH	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
7	HARIRAM.T.G	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
8	Y.HARISH RAAGHAVENDRA	ASHOK LEYLAND, ENNORE	05-06-2018	09-06-2018
9	Y.HARISH RAAGHAVENDRA	GHCL LIMITED	07-08-2018	09-05-2018
10	KABILAN.M	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
11	M.KARTHICK	GOA SHIPYARD LIMITED	02-06-2018	16-06-2018
12	B.KARTHIK ANAND	CENTRE FOR TOTALSTATION AND COMPUTING (CTC)	23-11-2017	07-12-2017
13	P.KARUNAKARAN	ASHOK LEYLAND, ENNORE, CHENNAI	5-6-2018	9-6-2018
14	MADHU SOOTHANAN P J	CMRL DEPOT, ADMIN BUILDING, POONAMALLEE HIGH ROAD, KOYAMBEDU, CHENNAI - 600107	11-06-2018	15-06-2018
15	V MEENAKSHI	SCHNEIDER ELECTRICS PVT. LTD.,	15-05-2018	5-05-2018
16	L.S.NAGASAI	GOA SHIPYARD LIMITED	02-06-2018	16-06-2018
17	L. SHANMUKHA NAGA SAI	CENTRE FOR TOTALSTATION AND COMPUTING (CTC)	23-11-2017	07-12-2017
18	NIKHIL YADAV	GOA SHIPYARD LIMITED.	02-06-2018	16-06-2018
19	NIKHIL YADAV	CENTRE FOR TOTALSTATION AND COMPUTING (CTC)	23-11-2017	07-12-2017
20	PRASATH.P	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
21	RAGESH T	KARTHIK INDUSTRIES	11-06-2018	13-06-2018
22	N.RAJALEKSHMI	POWER GRID CORPORTION OF INDIA LIMITED	04-06-2018	06-06-2018
23	GUDIVADA RAMA KRISHNA	NARLA TATA RAO THERMAL POWER STATION (VTPS)	14-05-2018	26-05-2018
24	RAMYA. R	POWER GRID CORPORTION OF INDIA LIMITED	04-06-2018	06-06-2018
25	RUDRAVARAM SAI NITHESH VARMA	LIVEWIRE,	30-5-2018	06-06-2018
26	NOONSAVATH SANDEEP	NARLA TATA RAO THERMAL POWER STATION (VTPS)	14-05-2018	26-05-2018
27	SANKETH SAHA	GOA SHIPYARD LIMITED.	02-06-2018	16-06-2018
28	V SOWMYA	NOVUS GREEN ENERGY SYSTEMS	3-05-2018	23-05-2018
29	SRIPRASATH V.J	KARTHIK INDUSTRIES	11-06-2018	13-06-2018
30	SWAMINATHAN.J	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
31	VIGNESHWARAN.N	ULTRATECH CEMENTS LIMITED	15-05-2018	24-05-2018
32	VIGNESHWARAN.N	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
33	VIKNESEH.M.R.	CHENNAI METRO RAIL LIMITED	11-06-2018	15-06-2018
34	K.N.S VINEELA REDDY	DR.NTTPS	3-05-2018	16-05-2018
35	Sri Maanvitha G	Tamilnadu generation and distribution corporation, Madukkarari.	4.11.2017	8.12.2017
36	Sri Maanvitha G	BHEL, Hyderabad.	4.05.2018	18.05.2018

37	Chervu Sowmya	Integral Coach Factory, Chennai.	4.12.2017	18.12.2017
38	Chervu Sowmya	BSNL, Chennai.	6.06.2016	10.06.2016
39	P. Ashok Kumar	Southern Railway, Perambur.	18.05.2108	24.05.2018
40	N. Adhith Sarvesh	Southern Railway, Erode.	1.06.2017	6.06.2017
41	N. Adhith Sarvesh	Mettur Thermal Power Station	28.11.2017	1.12.2017
42	N. Adhith Sarvesh	Southern Railway, Perambur.	18.05.2108	24.05.2018
43	Vaibhav Krishna	Modern Centre Electrical and Sanitary LLC, Sultanate of Oman	19.05.2018	31.05.2018
44	R Adithya	Neyveli Lignite Corporation, Neyveli	28-11-2017	11-12-2017
45	R Adithya	Carriage Works, Perambur	18-05-2018	24-05-2018
46	Anupam Soorya	Salzer electronics, Coimbatore	21-05-2018	31-05-2018
47	Aparna Krishna	Ayati Labs Pvt. Ltd. , Bangalore	03-05-2018	15-06-2018
48	Athish T	Forge Innovation Accelerator, Coimbatore	05-06-2017	03-07-2017
49	Athish T	Ayati Labs Pvt. Ltd. , Bangalore	03-05-2018	15-06-2018
50	Balaji R	Shree Abirami Engineering Works	23-11-2017	25-11-2017
51	Chevendra JABILI	APGENCO, Vijayawada	07-06-2017	20-06-2017
52	Chevendra JABILI	South Central Railway, Vijayawada	29-11-2017	08-12-2017
53	M Deepak Aravind	Neyveli Lignite Corporation, Neyveli	22-06-2017	02-07-2017
54	M Deepak Aravind	Bharat Earth Movers Limited, Bengaluru Complex	17-05-2018	29-05-2018
55	Ganesh.V	Roots Industrie India limited, Coimbatore	08-07-2017	14-07-2017
56	Ganesh.V	Oranger sorting machines India Pvt Ltd, Coimbatore	30-11-2017	04-12-2017
57	Ganesh.V	Best Engineers pumps Pvt LTD, Coimbatore	07-05-2018	31-05-2018
58	Gowthaman B	TUV-SUD, Saki Vihar Rd, Mumbai,Maharashtra 400072	11-12-2017	15-12-2017
59	Gowthaman B	Shri Ramalinga mills , Arupukottai	01-12-2017	06-12-2017
60	Gowthaman B	TANGEDCO, Tuticorin	13-09-2016	18-09-2016
61	Guru Vyaas G	kundankulam nuclear power station, Kudankulam	27/06/17	01-07-17
62	Guru Vyaas G	Sakthi Sugars limited, Erode	5-12-17	10-12-17
63	Hareesh B	kundankulam nuclear power station, Kudankulam	27/06/17	01-07-17
64	Manoj R	kundankulam nuclear power station, Kudankulam	27/06/17	01-07-17
65	Maram Shiva Bhaskar Reddy	APGENCO, Ibrahimpatnam,Vijayawada	10-05-2018	23-05-2018
66	N Naveen Kumar Reddy	Uranium Corporation of India Ltd.(UCIL), Pulivendla,Kadapa	28-11-2017	09-12-2017
67	Rajesh T	Lakshmi Devices, Chennai	14-05-2018	19-05-2018
68	Rajesh T	Roots Industries India limited, Coimbatore	08-07-2017	14-07-2017
69	Rajesh T	Oranger sorting machines India Pvt Ltd, Coimbatore	30-11-2017	04-12-2017
70	Sandhiya Prabha K	Neyveli Lignite Corporation, Neyveli	20-06-2017	30-06-2017
71	Sandhiya Prabha K	Bharat Earth Movers Limited, Bengaluru Complex	17-05-2018	29-05-2018
72	Sasidharan M S	Lakshmi Devices, Chennai	14-05-2018	19-05-2018
73	Sathiyalingam S	kundankulam nuclear power station, Kudankulam	27/06/17	01-07-17
74	Saravanan B	NLC India Limited, Neyveli	28-11-2017	11-12-2017
75		Salem Steel Plant, Salem.	02-05-2018	08-05-2018

76	Sathyanarayanan A	Avench systems, Bangalore	04-05-2018	24-05-2018
77	Shanath Koushik B	Tuticorin Thermal Power Plant, Tuticorin	19-07-2017	24-07-2017
78	B Sharanya	PCS Electric Panel India Pvt Ltd., Chennai	19-12-2016	24-02-2016
79	B Sharanya	Neyveli Lignite Corporation, Neyveli	22-06-2017	02-07-2017
80	B Sharanya	Bharat Earth Movers Limited, Bengaluru Complex	17-05-2018	29-05-2018
81	K. T. Sreenithi	NLC India Ltd., Neyveli	20-06-2017	30-06-2017
82	K. T. Sreenithi	BEML Limited, Bangalore-560027	17-05-2018	29-05-2018
83	Sri Vyshnavi Uppaluri	BHEL, Hyderabad	29-11-2017	10-12-2017
84	Sri Vyshnavi Uppaluri	Prolific systems and technologies	07-05-2018	30-05-2018
85	Suresh Ram R	Salzer electronics, Coimbatore	22-12-2015	28-12-2015
86	Suresh Ram R	KELTRON, Kerala	12-06-2017	23-06-2017
87	Suresh Ram R	Craftsman Electric, Coimbatore	04-12-2017	09-12-2017
88	Suresh Ram R	Bharat Electronics Limited (BEL), Bangalore	28-05-2018	14-06-2018
89	U.GOVARDHAN SAI KUMAR	GROWEL PROCESSORS PVT LTD.	02-06-2017	29-06-2017
90	U.GOVARDHAN SAI KUMAR	MUNNANGI SEA FOODS PVT LTD	02-05-2018	19-05-2018
91	Balagopal K	L&T Electrical and Automation	03/12/2015	18/12/2015
92	Balagopal K	Mafatlal Industries Limited	06/06/2016	23/06/2016
93	Shumitha A	TamilNadu Generation and Distribution Corporation Ltd	21/12/2015	26/12/2015
94	Kashreya J	Roots Industries India Ltd	07/2016	07/2016
95	Shumitha A	Roots Industries India Ltd	07/2016	07/2016
96	Prasaanth S	Roots Industries India Ltd	07/2016	07/2016
97	Ganga R	Roots Industries India Ltd	07/2016	07/2016
98	Vaishnavi G	Roots Industries India Ltd	07/2016	07/2016
99	Shumitha A	Bharat Heavy Electricals Ltd	29/05/2017	23/06/2017
100	Adabala Taraka Sai	Verzeo Edutech Pvt. Ltd., Hyderabad	01-05-2018	15-06-2018
101	Raghava Kumar			
102	Balusu Rajendra Vara Prasad	Verzeo Edutech Pvt. Ltd., Hyderabad	01-05-2018	15-06-2018
103	K.Jaya Krishna Reddy	Verzeo Edutech Pvt. Ltd., Hyderabad	01-05-2018	15-06-2018
104	Bharathvaj S.	Barola Technologies, Chennai	20-11-2017	02-12-2017
105	Pechetti Bhavana	Nuclear Power Corporation of India Limited, Kudankulam	21.05.2018	31.05.2018
106	Amit S	Eaton FZE(Dubai)	1/06/2017	22/6/2017
107	Rajya S	Soliton Technologies Pvt Ltd	1/06/2016	30/06/2016
108	Rajya S	Kerala Electrical & Allied Engineering Co Ltd, Cochin	25/05/2016	31/05/2016
109	Vinothini K	Mettur Thermal Power Station-I	19/12/2016	23/12/2016

Students Feedback about Industrial Training

Refer Annexure B.2-III

CRITERION 3	Course Outcomes and Program Outcomes	175
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3.1 Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (25)

Program Articulation Matrix

Table B.3.1a Program articulation matrix for sample courses

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EEE100	3	3	-	-	-	-	-	-	-	-	-	-	-	-
EEE212	3	3	2	2	1	-	-	-	-	-	-	-	-	-
EEE321	3	3	-	-	-	-	-	-	-	-	-	-	-	-
EEE331	3	3	2	1	-	-	-	-	-	-	-	-	-	-
ECE310	3	3	3	2	-	-	-	-	-	-	-	1	1	-
EEE341	3	3	3	3	3	-	-	-	-	-	-	-	-	1
EEE454	3	3	3	2	3	-	-	-	-	-	-	-	1	2
EEE499	3	3	3	3	3	3	3	3	3	3	3	3	3	3

*Program Articulation Matrix for all the courses is available in department

Course Articulation Matrix

Table B.3.1b Course articulation matrix for a sample course

CO	Statement	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
EEE212.1	Formulate equations for electric circuits based on fundamental laws.	3	3	-	-	-	-	-	-	-	-	-	-	-	-
EEE212.2	Compute electrical quantities using network theorems and Graph theory	3	3	-	-	1	-	-	-	-	-	-	-	-	-
EEE212.3	Analyse the behaviour of electric circuits under steady state and transient conditions	3	3	2	2	1	-	-	-	-	-	-	-	-	-
EEE212.4	Evaluate circuit parameters in single phase and three phase systems	3	3	-	-	-	-	-	-	-	-	-	-	-	-
EEE212.5	Investigate measures for power factor improvement of electrical networks.	3	2	1	2	-	-	-	-	-	-	-	-	-	-
EEE212.6	Deduce network parameters for two/multi port networks	3	2	-	-	-	-	-	-	-	-	-	-	-	-
EEE212		3	3	2	2	1	-	-	-	-	-	-	-	-	-

*Course Articulation Matrix for all the courses is available in department

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

3.2 Attainment of Course Outcomes (75)

3.2.1. Describe the assessment tool and process used to gather the data upon which the evaluation of course Outcome is based (10)

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 for 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 Figure 3.2.1. In the CO attainment calculation for a course, 80% is contributed through direct attainment and 20% through Indirect attainment. As per the university regulation, 50% of the direct attainment 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.

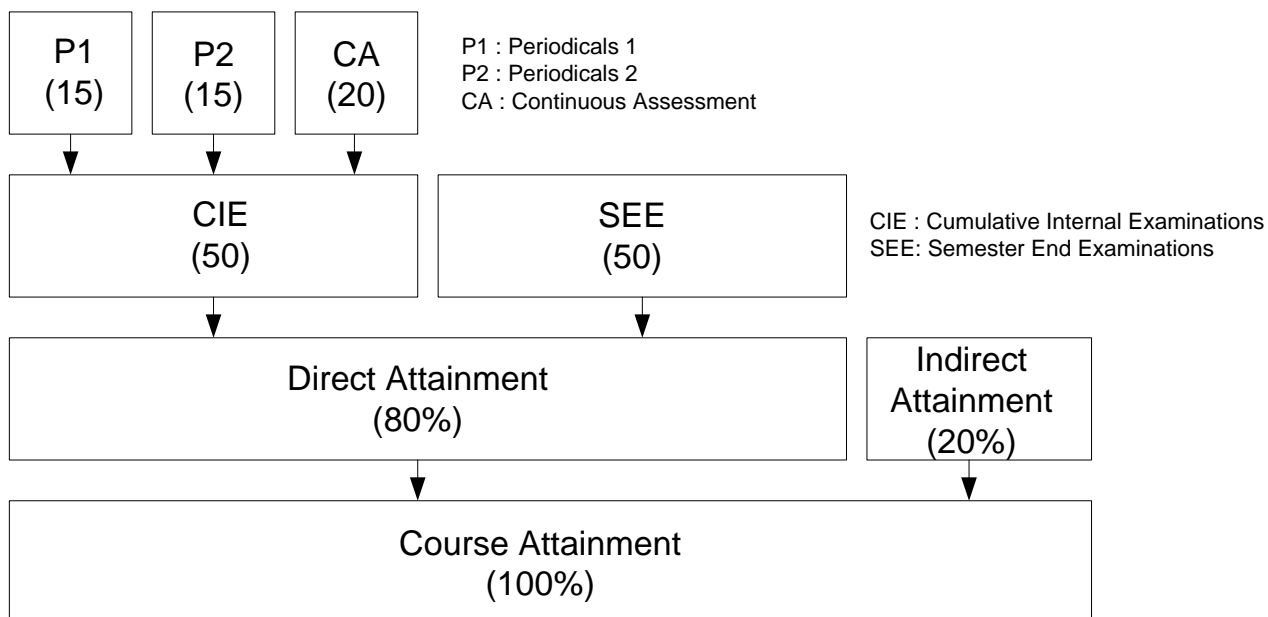
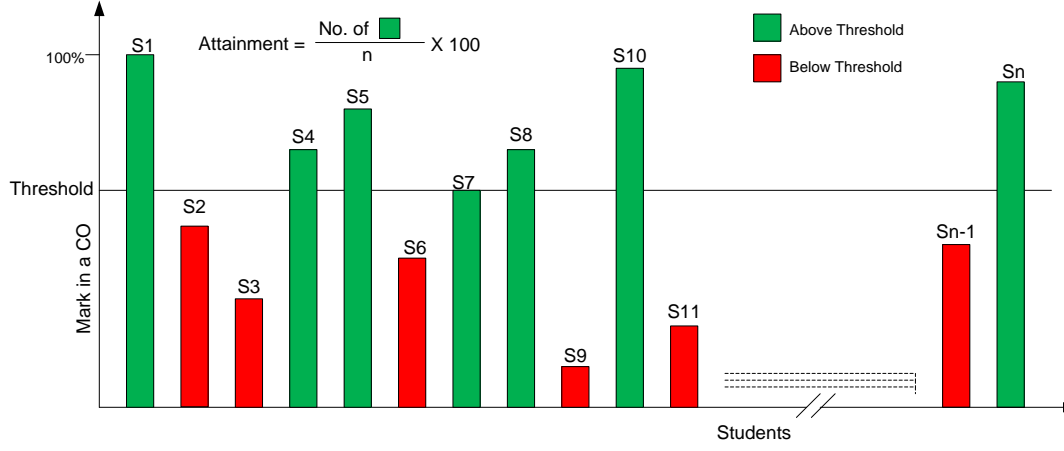


Figure B.3.2.1a CO attainment for theory courses

Inpods do the attainment calculation based on the following expression:

<p>Direct</p>	<p>The direct part of the CO attainment is computed through exams. The percentage of students in the class who scored more than threshold percentage of marks in the respective CO is the attainment.</p>  <p style="text-align: center;">Figure B.3.2.1b CO attainment calculation</p>
<p>Indirect</p>	<p>Based on Survey</p> $Attainment = \frac{\sum_{i=1}^5 i * \text{no. of students gave } i \text{ option}}{5 * \text{no. of responses}}$

3.2.1. Record the attainment of Course Outcomes of all courses with respect to set attainment levels (65)

Subject Code and Name	Sem	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
			(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
			Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
MAT211 Integral Transforms and Complex Analysis	3	CO1	64.22	3	37.61	1	54.13	2	78.76	3	59.06	2.2	50	Yes
		CO2	57.80	2	37.62	1	53.21	1.5	78.76	3	58.32	1.8	50	Yes
		CO3	63.30	3	37.62	1	55.96	2	78.76	3	60.52	2.2	50	Yes
		CO4	69.73	3	37.62	1	52.29	2	78.76	3	57.59	2.2	50	Yes
		CO5	96.33	3	37.62	1	49.54	2	78.76	3	55.39	2.2	50	Yes
		CO6	96.33	3	37.62	1	50.46	2	78.76	3	56.12	2.2	50	Yes
EEE212 Electric Circuits	3	CO1	72.48	3	31.19	1	53.21	2	84.16	3	59.40	2.2	50	Yes
		CO2	98.17	3	31.19	1	86.24	2	84.16	3	85.82	2.2	50	Yes
		CO3	50.46	2	31.19	1	42.20	1.5	84.16	3	50.59	1.8	50	Yes
		CO4	42.20	2	31.19	1	33.95	1.5	84.16	3	43.99	1.8	50	No
		CO5	98.17	3	31.19	1	82.57	2	84.16	3	82.89	2.2	50	Yes
		CO6	98.17	3	31.19	1	47.71	2	84.16	3	55.00	2.2	50	Yes
ECE210 Digital Systems	3	CO1	87.85	3	44.86	2	77.57	2.5	94.92	3	81.04	2.6	50	Yes
		CO2	67.29	3	44.86	2	57.01	2.5	94.92	3	64.59	2.6	50	Yes
		CO3	51.40	2	44.86	2	47.66	2	94.92	3	57.12	2.2	50	Yes
		CO4	95.33	3	44.86	2	56.08	2.5	94.92	3	63.84	2.6	50	Yes
		CO5	100	3	44.86	2	52.34	2.5	94.92	3	60.85	2.6	50	Yes
PHY250 Electrical Engineering Materials	3	CO1	93.55	3	30.65	1	80.65	2	69.63	3	78.44	2.2	50	Yes
		CO2	79.03	3	30.65	1	62.90	2	69.63	3	64.25	2.2	50	Yes
		CO3	95.16	3	30.65	1	90.32	2	69.63	3	86.18	2.2	50	Yes
		CO4	100	3	30.65	1	75.81	2	69.63	3	74.57	2.2	50	Yes
		CO5	100	3	30.65	1	85.48	2	69.63	3	82.31	2.2	50	Yes
EEE291 Simulation	3	CO1	81.65	3	56.88	2	71.56	2.8	82.86	3	73.82	2.84	60	Yes
		CO2	81.65	3	56.88	2	71.56	2.8	82.86	3	73.82	2.84	60	Yes

Lab and Electrical Workshop		CO3	81.65	3	56.88	2	67.89	2.8	82.86	3	70.88	2.84	60	Yes
		CO4	81.65	3	56.88	2	67.89	2.8	82.86	3	70.88	2.84	60	Yes
		CO5	81.65	3	56.88	2	71.56	2.8	82.86	3	73.82	2.84	60	Yes
EEE292 Electric Circuits Lab	3	CO1	58.72	2	66.06	3	55.05	2.2	74.67	3	58.97	2.36	60	No
		CO2	58.72	2	66.06	3	55.05	2.2	74.67	3	58.97	2.36	60	No
		CO3	58.72	2	66.06	3	54.13	2.2	74.67	3	58.24	2.36	60	No
		CO4	58.72	2	66.06	3	55.05	2.2	74.67	3	58.97	2.36	60	No
		CO5	58.72	2	66.06	3	55.96	2.2	74.67	3	59.71	2.36	60	No
MAT212 Mathematical Statistic and Numerical Methods	4	CO1	95.37	3	50	2	72.69	2.5	80	3	74.15	2.6	50	Yes
		CO2	95.37	3	50	2	72.69	2.5	80	3	74.15	2.6	50	Yes
		CO3	95.37	3	50	2	72.69	2.5	80	3	74.15	2.6	50	Yes
		CO4	94.44	3	50	2	72.22	2.5	80	3	73.78	2.6	50	Yes
		CO5	88.89	3	50	2	69.44	2.5	80	3	71.56	2.6	50	Yes
		CO6	95.37	3	50	2	72.69	2.5	80	3	74.15	2.6	50	Yes
EEE213 Electrical Measurements and Instrumentations	4	CO1	81.48	3	36.11	1	68.52	2	89.23	3	72.66	2.2	50	Yes
		CO2	73.15	3	36.11	1	53.70	2	89.23	3	60.81	2.2	50	Yes
		CO3	59.26	2	36.11	1	45.37	1.5	89.23	3	54.14	1.8	50	Yes
		CO4	67.59	3	36.11	1	38.89	2	89.23	3	48.96	2.2	50	No
EEE221 Electrical Machines 1	4	CO1	29.36	1	17.43	1	23.85	1	85.85	3	36.25	1.4	50	No
		CO2	33.95	1	17.43	1	27.52	1	85.85	3	39.19	1.4	50	No
		CO3	66.97	3	17.43	1	33.95	2	85.85	3	44.33	2.2	50	No
		CO4	55.96	2	17.43	1	28.44	1.5	85.85	3	39.92	1.8	50	No
		CO5	88.99	3	17.43	1	33.95	2	85.85	3	44.33	2.2	50	No
		CO6	88.99	3	17.43	1	28.44	2	85.85	3	39.92	2.2	50	No
EEE222 Electro Magnetic Theory	4	CO1	49.07	2	21.30	1	39.82	1.5	77.57	3	47.37	1.8	50	No
		CO2	41.67	2	21.30	1	25	1.5	77.57	3	35.51	1.8	50	No
		CO3	52.78	2	21.30	1	40.74	1.5	77.57	3	48.11	1.8	50	No
		CO4	96.30	3	21.30	1	26.85	2	77.57	3	37.00	2.2	50	No
		CO5	96.30	3	21.30	1	24.07	2	77.57	3	34.77	2.2	50	No
PHY250	4	CO1	98.15	3	16.67	1	74.07	2	63.45	3	71.95	2.2	50	Yes

Electrical Engineering Materials		CO2	77.78	3	16.67	1	61.11	2	63.45	3	61.58	2.2	50	Yes
		CO3	96.30	3	16.67	1	64.82	2	63.45	3	64.54	2.2	50	Yes
		CO4	98.15	3	16.67	1	70.37	2	63.45	3	68.99	2.2	50	Yes
		CO5	98.15	3	16.67	1	79.63	2	63.45	3	76.39	2.2	50	Yes
CHY271 Electroc Chemical Energy Systems and Process	4	CO1	63.64	3	29.09	1	45.46	2	83.18	3	53.00	2.2	50	Yes
		CO2	65.46	3	29.09	1	47.27	2	83.18	3	54.45	2.2	50	Yes
		CO3	85.46	3	29.09	1	45.46	2	83.18	3	53.00	2.2	50	Yes
		CO4	83.64	3	29.09	1	60	2	83.18	3	64.64	2.2	50	Yes
		CO5	100	3	29.09	1	41.82	2	83.18	3	50.09	2.2	50	Yes
		CO6	100	3	29.09	1	49.09	2	83.18	3	55.91	2.2	50	Yes
Humanitive Elective 2 HUM257	4	CO1	96.15	3	100	3	96.15	3	100	3	96.92	3	50	Yes
		CO2	96.15	3	100	3	100	3	100	3	100	3	50	Yes
		CO3	100	3	100	3	100	3	100	3	100	3	50	Yes
		CO4	100	3	100	3	100	3	100	3	100	3	50	Yes
		CO5	100	3		NA	100	3	100	3	100	3	50	Yes
Humanitive Elective 2 HUM259	4	CO1	54.55	2	97.73	3	77.27	2.5	88.94	3	79.61	2.6	50	Yes
		CO2	65.91	3	97.73	3	81.82	3	88.94	3	83.24	3	50	Yes
		CO3	77.27	3	97.73	3	88.64	3	88.94	3	88.70	3	50	Yes
		CO4	77.27	3	97.73	3	93.18	3	88.94	3	92.33	3	50	Yes
		CO5	52.27	2	97.73	3	97.73	2.5	88.94	3	95.97	2.6	50	Yes
EEE293 Electrical Machines Lab 1	4	CO1	59.26	2	63.89	3	50	2.2	83.57	3	56.71	2.36	60	No
		CO2	59.26	2	63.89	3	53.70	2.2	83.57	3	59.68	2.36	60	No
		CO3	59.26	2	63.89	3	50	2.2	83.57	3	56.71	2.36	60	No
		CO4	59.26	2	63.89	3	53.70	2.2	83.57	3	59.68	2.36	60	No
EEE294 Measurements and Digital Circuits Lab	4	CO1	62.96	3	47.22	2	57.41	2.8	91.67	3	64.26	2.84	60	Yes
		CO2	62.96	3	47.22	2	52.78	2.8	91.67	3	60.56	2.84	60	Yes
		CO3	62.96	3	47.22	2	57.41	2.8	91.67	3	64.26	2.84	60	Yes
		CO4	62.96	3	47.22	2	56.48	2.8	91.67	3	63.52	2.84	60	Yes
SSK111 Soft Skill 1	4	CO1	96.33	3	0	NA	96.33	3	77.6	3	92.58	3	50	Yes
		CO2	96.33	3	0	NA	96.33	3	78.2	3	92.70	3	50	Yes

		CO3	96.33	3	49.54	2	73.39	2.5	73.8	3	73.48	2.6	50	Yes
		CO4	96.33	3	49.54	2	62.39	2.5	72.8	3	64.47	2.6	50	Yes
		CO5	96.33	3	49.54	2	73.39	2.5	78.2	3	74.36	2.6	50	Yes
		CO6	96.33	3	49.54	2	88.99	2.5	78.8	3	86.95	2.6	50	Yes
EEE311 Electronic Circuits	5	CO1	51.91	2	36.06	1	47.96	1.5	83.09	3	54.98	1.8	50	Yes
		CO2	58.28	2	20.57	1	48.85	1.5	83.09	3	55.70	1.8	50	Yes
		CO3	70.99	3	50.63	2	64.21	2.5	83.09	3	67.98	2.6	50	Yes
		CO4	100	3	43.4	2	71.70	2.5	83.09	3	73.97	2.6	50	Yes
		CO5	100	3	42.46	2	71.23	2.5	83.09	3	73.60	2.6	50	Yes
EEE321 Electrical Machines 2	5	CO1	64.49	3	40.81	2	58.60	2.5	84.80	3	63.84	2.6	50	Yes
		CO2	54.24	2	42.73	2	51.29	2	84.80	3	57.99	2.2	50	Yes
		CO3	71.40	3	51.27	2	64.69	2.5	84.80	3	68.71	2.6	50	Yes
		CO4	97.08	3	60.56	3	78.84	3	84.80	3	80.04	3	50	Yes
EEE331 Electrical Energy Systems 1	5	CO1	71.58	3	50.27	2	64.48	2.5	88.18	3	69.22	2.6	50	Yes
		CO2	76.42	3	0	NA	76.42	3	88.18	3	78.77	3	50	Yes
		CO3	70.64	3	40	2	60.42	2.5	88.18	3	65.97	2.6	50	Yes
		CO4	73.9	3	38.44	1	62.08	2	88.18	3	67.3	2.2	50	Yes
		CO5	98.11	3	44.81	2	71.47	2.5	88.18	3	74.81	2.6	50	Yes
		CO6	98.11	3	35.85	1	66.98	2	88.18	3	71.22	2.2	50	Yes
ECE220 Signals and Systems	5	CO1	53.94	2	46.17	2	49.56	2	76.99	3	55.04	2.2	50	Yes
		CO2	47.42	2	45.87	2	39.72	2	76.99	3	47.17	2.2	50	No
		CO3	42.00	2	41.01	2	40.48	2	76.99	3	47.78	2.2	50	No
		CO4	54.96	2	44.84	2	42.52	2	76.99	3	49.41	2.2	50	No
ECE310 Introduction to Micro Controllers and Applications	5	CO1	55.66	2	50	2	53.77	2	86.25	3	60.27	2.2	50	Yes
		CO2	48.11	2	42.93	2	46.39	2	86.25	3	54.36	2.2	50	Yes
		CO3	39.63	1	43.68	2	40.99	1.5	86.25	3	50.03	1.8	50	Yes
		CO4	49.37	2	59.35	2	52.70	2	86.25	3	59.41	2.2	50	Yes
		CO5	57.55	2	0	NA	57.55	2	86.25	3	63.29	2.2	50	Yes
EEE391 Electrical	5	CO1	86.79	3	66.04	3	73.59	3	85.8	3	76.03	3	60	Yes
		CO2	86.79	3	66.04	3	83.02	3	85.8	3	83.58	3	60	Yes

Machines Lab 2		CO3	86.79	3	66.04	3	69.81	3	85.8	3	73.01	3	60	Yes
		CO4	86.79	3	66.04	3	69.81	3	85.8	3	73.01	3	60	Yes
EEE392 Measurements and Analog Circuit Lab	5	CO1	71.70	3	31.13	1	50	2.6	77.55	3	55.51	2.68	60	No
		CO2	71.70	3	31.13	1	51.89	2.6	77.55	3	57.02	2.68	60	No
		CO3	71.70	3	31.13	1	42.45	2.6	77.55	3	49.47	2.68	60	No
		CO4	71.70	3	31.13	1	50	2.6	77.55	3	55.51	2.68	60	No
SSK112 Soft Skills 2	5	CO1	98.11	3	0	NA	98.11	3	77.6	3	94.01	3	50	Yes
		CO2	98.11	3	0	NA	98.11	3	78.2	3	94.13	3	50	Yes
		CO3	98.11	3	15.09	1	27.36	2	73.8	3	36.65	2.2	50	No
		CO4	98.11	3	15.09	1	18.87	2	72.8	3	29.65	2.2	50	No
		CO5	98.11	3	15.09	1	37.74	2	78.2	3	45.83	2.2	50	No
		CO6	98.11	3	15.09	1	29.25	2	78.8	3	39.16	2.2	50	No
EEE332 Electrical Energy Systems 2	6	CO1	68.49	3	53.46	2	62.89	2.5	91.43	3	68.60	2.6	50	Yes
		CO2	45.79	2	45.60	2	56.91	2	91.43	3	63.82	2.2	50	Yes
		CO3	66.28	3	45.42	2	60.74	2.5	91.43	3	66.88	2.6	50	Yes
		CO4	92.52	3	0	NA	92.52	3	91.43	3	92.30	3	50	Yes
		CO5	53.16	2	30.22	1	44.51	1.5	91.43	3	53.89	1.8	50	Yes
EEE341 Power Electronics	6	CO1	51.24	2	50.63	2	51.04	2	86.72	3	58.17	2.2	50	Yes
		CO2	36.91	1	30	1	35.18	1	86.72	3	45.49	1.4	50	No
		CO3	32.67	1	39.22	1	34.85	1	86.72	3	45.22	1.4	50	No
		CO4	58.02	2	0	NA	58.02	2	86.72	3	63.76	2.2	50	Yes
		CO5	49.06	2	39.00	1	44.03	1.5	86.72	3	52.56	1.8	50	Yes
EEE342 Control Engineering	6	CO1	76.45	3	53.15	2	68.28	2.5	86.76	3	71.97	2.6	50	Yes
		CO2	68.40	3	58.49	2	64.72	2.5	86.76	3	69.13	2.6	50	Yes
		CO3	78.77	3	41.83	2	66.18	2.5	86.76	3	70.30	2.6	50	Yes
		CO4	84.91	3	32.08	1	58.13	2	86.76	3	63.86	2.2	50	Yes
ECE221 Digital Signal Processing	6	CO1	70.71	3	19.57	1	53.67	2	87.65	3	60.46	2.2	50	Yes
		CO2	62.15	3	5.50	1	27.54	2	87.65	3	39.56	2.2	50	No
		CO3	82.88	3	27.83	1	64.53	2	87.65	3	69.15	2.2	50	Yes
		CO4	85.14	3	27.83	1	66.04	2	87.65	3	70.36	2.2	50	Yes

		CO5	97.25	3	21.56	1	59.40	2	87.65	3	65.05	2.2	50	Yes
Elective 1: EEE371 Advanced Micro Controllers	6	CO1	75	3	56	2	65.5	2.5	92	3	70.8	2.6	50	Yes
		CO2	100	3	56	2	78	2.5	92	3	80.8	2.6	50	Yes
		CO3	62	3	31	1	46.5	2	92	3	55.6	2.2	50	Yes
		CO4	74	3	65	3	69.5	3	92	3	74	3	50	Yes
Elective 1: EEE459 Network Synthesis	6	CO1	62	3	19	1	48	2	88.32	3	56.06	2.2	50	Yes
		CO2	67	3	57	2	64	2.5	88.32	3	68.86	2.6	50	Yes
		CO3	59	2	18	1	45	1.5	88.32	3	53.66	1.8	50	Yes
		CO4	98	3	40	2	69	2.5	88.32	3	72.86	2.6	50	Yes
		CO5	80	3	68	3	76	3	88.32	3	78.46	3	50	Yes
Elective 1: EEE474 Digital Image Processing	6	CO1	53.41	2	79.55	3	62.12	2.5	82.64	3	66.22	2.6	50	Yes
		CO2	37.5	1	63.64	3	46.21	2	82.64	3	53.50	2.2	50	Yes
		CO3	45.45	2	63.64	3	54.55	2.5	82.64	3	60.17	2.6	50	Yes
		CO4	71.82	3	71.82	3	71.82	3	82.64	3	73.99	3	50	Yes
EEE393 Electronic Circuits Lab	6	CO1	30.19	1	34.91	1	30.19	1	83.29	3	40.81	1.4	60	No
		CO2	30.19	1	34.91	1	29.25	1	83.29	3	40.05	1.4	60	No
		CO3	30.19	1	34.91	1	31.13	1	83.29	3	41.56	1.4	60	No
		CO4	30.19	1	34.91	1	31.13	1	83.29	3	41.56	1.4	60	No
EEE394 MicroProcesso r and MicroControlle r Lab	6	CO1	41.51	2	26.42	1	36.79	1.8	87.1	3	46.85	2.04	60	No
		CO2	41.51	2	26.42	1	33.96	1.8	87.1	3	44.59	2.04	60	No
		CO3	41.51	2	26.42	1	30.19	1.8	87.1	3	41.57	2.04	60	No
EEE397 Seminar	6	CO1	17.93	1	0	NA	17.92	1	86.04	3	31.55	1.4	60	No
		CO2	17.93	1	0	NA	17.93	1	86.04	3	31.55	1.4	60	No
		CO3	17.93	1	66.98	3	22.64	2	86.04	3	35.32	2.2	60	No
		CO4	0	NA	66.98	3	66.98	3	86.04	3	70.80	3	60	Yes
SSK113 Soft Skills 3	6	CO1	51.89	2	0	NA	51.89	2	77.6	3	57.03	2.2	50	Yes
		CO2	51.89	2	0	NA	51.89	2	78.2	3	57.15	2.2	50	Yes
		CO3	51.89	2	50	2	46.23	2	73.8	3	51.74	2.2	50	Yes
		CO4	51.89	2	50	2	46.23	2	72.8	3	51.54	2.2	50	Yes
		CO5	51.89	2	50	2	46.23	2	78.2	3	52.62	2.2	50	Yes

		CO6	51.89	2	50	2	47.17	2	78.8	3	53.50	2.2	50	Yes
EEE431 Power System Protection and Switchgear	7	CO1	75.82	3	63.45	3	72.73	3	89.23	3	76.03	3	50	Yes
		CO2	72.05	3	77.60	3	73.9	3	86.68	3	76.46	3	50	Yes
		CO3	75.48	3	56.37	2	65.92	2.5	87.52	3	70.24	2.6	50	Yes
		CO4	75.48	3	51.33	2	63.4	2.5	79.39	3	66.60	2.6	50	Yes
EEE441 Electrical Drives and Control	7	CO1	80.95	3	51.26	2	71.05	2.5	80.26	3	72.89	2.6	50	Yes
		CO2	65.41	3	33.02	1	57.32	2	81.47	3	62.15	2.2	50	Yes
		CO3	59.54	2	56.37	2	58.75	2	81.77	3	63.35	2.2	50	Yes
		CO4	73.35	3	45.85	2	64.19	2.5	80.60	3	67.47	2.6	50	Yes
		CO5	100	3	51.89	2	75.95	2.5	76.16	3	75.99	2.6	50	Yes
ENV200 Environmental Studies	7	CO1	52.83	2	100	3	81.13	2.5	91.19	3	83.14	2.6	50	Yes
		CO2	69.81	3	100	3	100	3	91.19	3	98.24	3	50	Yes
		CO3	99.06	3	100	3	100	3	91.19	3	98.24	3	50	Yes
		CO4	99.06	3	0	NA	99.06	3	91.19	3	97.48	3	50	Yes
Elective 2&3: EEE454 Power System Control	7	CO1	84	3	46.67	2	71.56	2.5	87.1	3	74.67	2.6	50	Yes
		CO2	62.84	3	70	3	64.65	3	83.33	3	68.39	3	50	Yes
		CO3	63.33	3	74.4	3	66.1	3	82	3	69.28	3	50	Yes
		CO4	100	3	0	NA	100	3	78.67	3	95.73	3	50	Yes
		CO5	100	3	74.67	3	87.33	3	78.71	3	85.61	3	50	Yes
Elective 2&3: EEE455 High Voltage Engineering	7	CO1	92	3	50	2	71	2.5	90.19	3	74.84	2.6	50	Yes
		CO2	73	3	47	2	64	2.5	90.19	3	69.24	2.6	50	Yes
		CO3	63	3	36	1	54	2	90.19	3	61.24	2.2	50	Yes
		CO4	92	3	56	2	74	2.5	90.19	3	77.24	2.6	50	Yes
		CO5	92	3	58	2	75	2.5	90.19	3	78.04	2.6	50	Yes
		CO6	92	3	0	NA	92	3	90.19	3	91.64	3	50	Yes
Elective 2&3: EEE457 Utilization of Electric Energy	7	CO1	77.25	3	23.19	1	50.72	2	82.6	3	57.10	2.2	50	Yes
		CO2	67.68	3	38.3	1	28.98	2	76.6	3	38.50	2.2	50	No
		CO3	73.91	3	28.26	1	57.97	2	75.3	3	61.44	2.2	50	Yes
		CO4	98.55	3	30.19	1	28.98	2	74.5	3	38.08	2.2	50	No
Elective2&3:	7	CO1	67	3	75	3	78	3	80	3	78.4	3	50	Yes

EEE461 Advanced Control Theory		CO2	71	3	65	3	70	3	80	3	72	3	50	Yes
		CO3	100	3	61	3	82	3	80	3	81.6	3	50	Yes
		CO4	88	3	51	2	77	2.5	80	3	77.6	2.6	50	Yes
		CO5	100	3	88	3	72	3	80	3	73.6	3	50	Yes
Elective 2&3: EEE471 Embedded System Design	7	CO1	63.16	3	52.63	2	57.90	2.5	87.5	3	63.82	2.6	50	Yes
		CO2	77.19	3	52.63	2	57.90	2.5	89.2	3	64.16	2.6	50	Yes
		CO3	33.33	1	52.63	2	42.11	1.5	88.3	3	51.34	1.8	50	Yes
		CO4	96.49	3	52.63	2	63.16	2.5	90.8	3	68.69	2.6	50	Yes
Elective 2&3: EEE472 Fundamentals of Soft Computing	7	CO1	97.62	3	57.14	2	84.13	2.5	82	3	83.70	2.6	50	Yes
		CO2	90.18	3	71.43	3	83.93	3	80	3	83.14	3	50	Yes
		CO3	83.33	3	82.86	3	83.21	3	80	3	82.57	3	50	Yes
		CO4	100	3	85.71	3	95.24	3	80	3	92.19	3	50	Yes
		CO5	100	3	48.57	2	82.86	2.5	80	3	82.29	2.6	50	Yes
MNG400 Principles of Management	7	CO1	79	3	49	2	69.5	2.5	88.38	3	73.28	2.6	50	Yes
		CO2	72.5	3	62.5	3	70	3	88.38	3	73.68	3	50	Yes
		CO3	81.5	3	38	1	67	2	88.38	3	71.28	2.2	50	Yes
		CO4	98	3	70.5	3	84.5	3	88.38	3	85.28	3	50	Yes
		CO5	98	3	53	2	75.5	2.5	88.38	3	78.08	2.6	50	Yes
		CO6	93	3	87	3	91.5	3	88.38	3	90.88	3	50	Yes
EEE491 Power System Simulation Lab	7	CO1	95.28	3	81.13	3	81.13	3	87.76	3	82.46	3	60	Yes
		CO2	95.28	3	81.13	3	81.13	3	83.78	3	81.66	3	60	Yes
		CO3	95.28	3	81.13	3	82.08	3	78.33	3	81.33	3	60	Yes
		CO4	95.28	3	81.13	3	82.08	3	75.69	3	80.80	3	60	Yes
		CO5	95.28	3	81.13	3	81.13	3	82.16	3	81.34	3	60	Yes
EEE492 Power Electronics Lab	7	CO1	72.64	3	31.13	1	68.87	2	82.65	3	71.62	2.2	60	Yes
		CO2	72.64	3	56.60	2	61.32	2.5	84.48	3	65.95	2.6	60	Yes
		CO3	72.64	3	56.60	2	61.32	2.5	82.65	3	65.59	2.6	60	Yes
		CO4	72.64	3	56.60	2	62.26	2.5	77.21	3	65.25	2.6	60	Yes
Elective 4: EEE355	8	CO1	97.62	3	57.14	2	84.13	2.5	82	3	83.70	2.6	50	Yes
		CO2	90.18	3	71.43	3	83.93	3	80	3	83.14	3	50	Yes

Industrial Electronics		CO3	83.33	3	82.86	3	83.21	3	80	3	82.57	3	50	Yes
		CO4	100	3	85.71	3	95.24	3	80	3	92.19	3	50	Yes
		CO5	100	3	48.57	2	82.86	2.5	80	3	82.29	2.6	50	Yes
Elective 4: EEE452 Renewable Energy and Energy Conservation	8	CO1	45.71	2	39.52	1	44.17	1.5	91.85	3	53.71	1.8	50	Yes
		CO2	64.29	3	34.29	1	56.79	2	88.88	3	63.21	2.2	50	Yes
		CO3	41.75	2	31.43	1	39.17	1.5	87.4	3	48.82	1.8	50	No
		CO4	53.81	2	31.9	1	48.33	1.5	86.66	3	56.00	1.8	50	Yes
		CO5	64.29	3	50	2	59.22	2.5	82.93	3	63.96	2.6	50	Yes
EEE481 Energy Management and IT Applications	8	CO1	52.06	2	58.50	2	54.20	2	89.39	3	61.24	2.2	50	Yes
		CO2	52.30	2	76.84	3	60.48	2.5	90.56	3	66.50	2.6	50	Yes
		CO3	44.21	2	54.21	2	47.54	2	85.03	3	55.04	2.2	50	Yes
		CO4	41.05	2	60.70	3	50.88	2.5	74.11	3	55.52	2.6	50	Yes
		CO5	53.16	2	65.26	3	57.19	2.5	80.91	3	61.94	2.6	50	Yes
EEE499 Project	8	CO1	78.62	3	80.04	3	79.09	3	80	3	79.27	3	50	Yes
		CO2	0	NA	81.04	3	81.04	3	82	3	81.23	3	50	Yes
		CO3	74.55	3	90.68	3	79.58	3	84	3	80.47	3	50	Yes
		CO4	44.49	2	90.68	3	60.06	2.5	84	3	64.84	2.6	50	Yes
		CO5	73.09	3	95.96	3	81.06	3	83	3	81.44	3	50	Yes

3.3. Attainment of Program Outcomes and Program Specific Outcomes (75)

3.3.1. Describe the assessment tools and processes used for measuring the attainment of each Program Outcomes and Program Specific Outcomes (10)

The PO/PSO attainment is computed through direct and indirect means. 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 Figure 3.3.1.

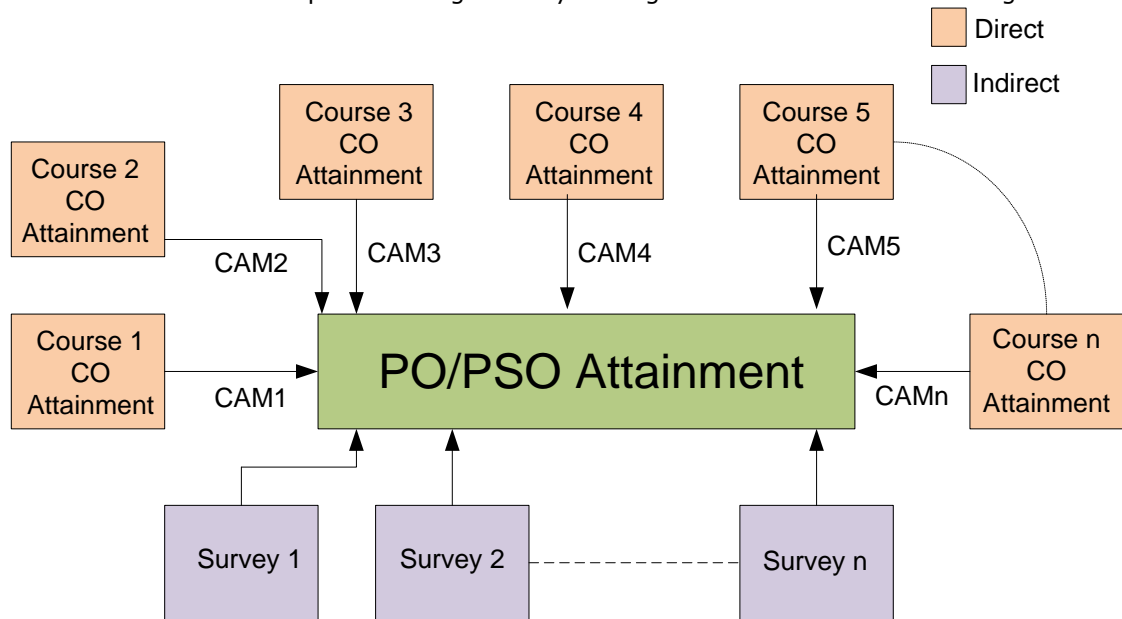


Figure 3.3.1. PO/PSO attainment

PO/PSO Attainment is Computed based on the following expressions

Direct	<p>Attainment of PO/PSO through a Course:</p> $PO_{ij} \text{ Attainment} = \frac{\sum_{k=1}^{CO_{max}} CA_k * CAM_{ik}}{\sum_{k=1}^{CO_{max}} CAM_{ik}}$ <p>Where, PO_{ij} is the Attainment of 'i' th PO through the course 'j' CO_{max} 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 'k' COs</p> <p>Attainment of PO/PSO through all courses</p> <p>Poi Attainment = Average across all Courses Addressing that POs/PSOs</p>
Indirect	<p>Based on Survey</p> $PO_i = \frac{\sum_{i=1}^5 i * \text{no. of students gave } i \text{ option}}{5 * \text{no. of responses}}$ <p>Where, PO_i is the attainment of the 'i' th PO</p>

3.3.2 Provide results of evaluation of each PO & PSO (65)
PO Attainment

Table B.3.3.2a PO direct attainment

Sem	Course Code/Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
1	ENG211 Communicative English								2.60	2.60	2.55		2.49		
	PHY100 Physics	2.24	2.24										2.24		
	MAT111 Calculus, Matrix Algebra and ODE	1.96	1.96												
	EEE100 Electrical Engineering	1.96	1.94												
	MEC100 Engineering Mechanics	2.16	2.16	2.15	2.16									2.16	
	MEC181 Engineering Drawing	1.16	1.16	1.16	1.16		1.16					1.16		1.16	
	PHY181 Physics Lab	2.82	2.82	2.82	2.82	2.82	2.82								
	MEC180 Workshop A	2.43	2.43	2.43		2.43					2.43	2.43		2.43	
2	CUL101 Cultural Education I						3.00	3.00	3.00	3.00	3.00	3.00	3.00		
	ENG112 Technical Communication								3.00	3.00	3.00		3.00		
	CHY100 Chemistry	1.80	2.40	2.40	2.40										
	MAT112 Vector Calculus, Fourier Series and PDE	2.56	2.58	2.60										2.50	
	ECE100 Electronics Engineering	2.92	2.93	3.00										2.88	
	CSE100 Computer Programming	2.80	2.80	2.80											
	MEC182 Computer Aided Drawing	1.08	1.08	1.08		1.08						1.08		1.08	
	CHY181 Chemistry Lab	2.51	2.51	2.51											
	EEE180 Workshop B	1.48	1.48	1.48							1.48			1.48	
3	CSE180 Computer Programming Lab	2.52	2.52	2.52		2.52									
	CUL102 Cultural Education II						3.00	3.00	3.00	3.00	3.00	3.00	3.00		
	MAT211 Integral Transforms and Complex Analysis	2.33	2.34	2.40											
	EEE212 Electric Circuits	2.07	2.05	1.93	2.00	2.00									
	ECE210 Digital Systems	2.32	2.32	2.30	2.27										
	MEC209 Mechanical Engineering	1.68	1.64	1.75											
	PHY250 Electrical Engineering Materials	2.20	2.20	2.20						2.20				2.20	
	CHY271 Electro Chemical Energy Systems & Process	2.14	2.10												
EEE291 Simulation Lab and Electrical Workshop	2.92	2.92	2.92		2.92				2.92	2.92					
EEE292 Electric Circuits Lab	2.68	2.68	2.68						2.68	2.68					

4	MAT212 Mathematical Statistic and Numerical Methods	3.00	3.00	3.00											
	EEE213 Electrical Measurements and Instrumentations	2.15	2.15	2.10										2.20	
	EEE221 Electrical Machines 1	1.87	1.88		2.00										
	EEE222 Electro Magnetic Theory	1.96	2.00		2.00									2.20	2.20
	PHY250 Electrical Engineering Materials	2.20	2.20	2.20					2.20					2.20	
	CHY271 Electroc Chemical Energy Systems & Process	2.20	2.20												
	Humanitive Elective 2: ENG252 Indian Thought Through English						1.40		1.40					1.40	
	Humanitive Elective 2: HUM252						3.00		3.00	3.00	3.00	3.00	3.00		
	Humanitive Elective 2: HUM259		2.84	2.84			2.84	2.77	2.84	2.80	2.84	2.84	2.84		
	Humanitive Elective 2: HUM257						3.00	3.00	3.00	3.00	3.00	3.00	3.00		
	EEE293 Electrical Machines Lab 1	2.60	2.60						2.60	2.60					
	EEE294 Measurements and Digital Circuits Lab	2.43	2.43	2.43					2.43	2.43					
	SSK111 Soft Skill 1		2.60		2.60				3.00	2.85	2.76			2.76	
5	EEE311 Electronic Circuits	2.28	2.40	2.45											
	EEE321 Electrical Machines 2	2.50	2.53												
	EEE331 Electrical Energy Systems 1	2.53	2.54	2.40	2.40										
	ECE220 Signals and Systems	2.00	2.00			1.90				1.80					
	ECE310 Introduction to Micro Controllers and Applications	2.20	2.22	2.36	2.40									2.60	2.60
	EEE391 Electrical Machines Lab 2	2.92	2.92						2.92	2.92					
	EEE392 Measurements and Analog Circuit Lab	2.76	2.76	2.76		2.76			2.76	2.76					
SSK112 Soft Skills 2		2.20		2.20					2.60	2.52	3.00	2.49			
6	EEE332 Electrical Energy Systems 2	2.36	2.36	2.45	2.52	3.00				3.00				3.00	
	EEE341 Power Electronics	1.96	1.90	2.00	2.12	2.28									1.80
	EEE342 Control Engineering	2.55	2.55	2.20	2.20	2.70									
	ECE221 Digital Signal Processing	2.20	2.20	2.20	2.20	2.20								2.20	
	Elective 1: EEE371 Advanced Micro Controllers	2.60	2.60	3.00										3.00	3.00
	Elective 1: EEE459 Network Synthesis	2.44	2.44	2.43											2.84
	Elective 1: EEE474 Digital Image Processing	2.60	2.66	2.66	3.00	3.00				3.00				2.68	2.60
	EEE393 Electronic Circuits Lab	1.48	1.48	1.48		1.48			1.48	1.48					
EEE394 MicroProcessor and MicroController Lab	1.72	1.72	1.72		1.72			1.72	1.72				1.72	1.72	

	EEE397 Seminar	1.76	1.88	2.60	2.60	2.60	2.60	2.60	2.04	1.76	2.12	2.60	2.60	2.28	2.28	
	SSK113 Soft Skills 3		2.20		2.20				2.20	2.20	2.20		2.20			
7	EEE431 Power System Protection and Switchgear	2.80	2.73	2.60										2.60		
	EEE441 Electrical Drives and Control	2.48	2.45	2.48										2.60	2.60	
	ENV200 Environmental Studies	3.00	2.80	3.00	2.80		2.80	2.95	3.00	3.00	2.95		2.95			
	Elective 2&3: EEE454 Power System Control	2.92	3.00	3.00	3.00	3.00								3.00	3.00	
	Elective 2&3: EEE455 High Voltage Engineering	2.60	2.51	2.20		2.60			3.00						2.65	
	Elective 2&3: EEE457 Utilization of Electric Energy	2.20	2.20	2.20			2.20								2.20	2.20
	Elective2&3: EEE461 Advanced Control Theory	2.92	2.95	3.00		3.00									2.89	2.90
	Elective 2&3: EEE471 Embedded System Design	2.40	2.33	2.60		2.60									2.33	2.33
	Elective 2&3: EEE472 Fundamentals of Soft Computing	2.84	2.89	2.90		2.60									2.87	2.90
	MNG400 Principles of Management	2.72	2.85	2.80			2.70		2.70	2.68	2.68		2.70			
	EEE491 Power System Simulation Lab	3.00	3.00	3.00	3.00	3.00			3.00	3.00					3.00	3.00
EEE492 Power Electronics Lab	2.94	2.94	2.92	2.92	2.94			2.94	2.95						1.50	
8	Elective 4: EEE355 Industrial Electronics	2.84	2.90	2.90	2.60									2.87	2.87	
	Elective 4: EEE452 Renewable Energy and Energy Conservation	2.04	2.08	2.60	1.80			2.10							2.20	
	EEE481 Energy Management and IT Applications	2.40	2.50	2.48			2.20		2.39					2.44	2.41	
	EEE499 Project	3.00	3.00	3.00	3.00	3.00	3.00	3.00	2.84	2.84	3.00	3.00	3.00	2.90	2.90	
	Direct Attainment	2.37	2.39	2.45	2.41	2.51	2.55	2.80	2.60	2.60	2.55	2.93	2.46	2.53	2.52	

PO Direct Attainment of 2014-18 Batch

Table B.3.3.2b PO indirect attainment

Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Survey 1	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Survey 2	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Indirect Attainment	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0

PO Indirect Attainment of 2014-18 Batch

Survey 1 : Refer Annexure B.3-I

Survey 2 : Refer Annexure B.3-II

Table B.3.3.2b PO Overall attainment

Survey	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
Direct	2.37	2.39	2.45	2.41	2.51	2.55	2.80	2.60	2.60	2.55	2.93	2.46	2.53	2.52
Indirect	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Overall	2.49	2.51	2.56	2.53	2.60	2.64	2.84	2.68	2.68	2.64	2.94	2.57	2.63	2.62

PO Overall Attainment of 2014-18 Batch

CRITERION 4	Students' Performance	100
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Table B.4a Admission data

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	CAY 2018-2019	CAYm1 2017-2018	CAYm2 2016-2017
Sanctioned intake of the program (N)	138	138	138
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/institutions, plus no. of students migrated to this program (N1)	122	108	126
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	0	0	0
Separate division students, if applicable (N3)	0	0	0
Total number of students admitted in the Program (N1 + N2 + N3)	122	108	126

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

Table B.4b Successfully graduated without backlogs

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated without backlogs in any semester/year of study (Without Backlog means no compartment or failures in any semester/year of study)			
		I Year	II Year	III Year	IV Year
CAY (2018-2019)	122(122+0+0)				
CAYm1(2017-2018)	108(108+0+0)	83			
CAYm2 (2016-2017)	126(126+0+0)	116	98		
CAYm3 (2015-2016)	111(111+0+0)	85	67	62	
CAYm4 (LYG)(2014-2015)	109(109+0+0)	79	69	60	59
CAYm5(LYGm1)(2013-2014)	135(135+0+0)	95	83	73	72
CAYm6(LYGm2)(2012-2013)	116(116+0+0)	85	81	77	76

Table B.4c Successfully graduated with backlogs

Year of entry	N1 + N2 + N3 (As defined above)	Number of students who have successfully graduated (Students with backlog in stipulated period of study)			
		I Year	II Year	III Year	IV Year
CAY (2018-2019)	122(122+0+0)				
CAYm1(2017-2018)	108(108+0+0)	2			
CAYm2 (2016-2017)	126(126+0+0)	0	3		
CAYm3 (2015-2016)	111(111+0+0)	1	5	12	
CAYm4 (LYG)(2014-2015)	109(109+0+0)	1	4	17	36
CAYm5(LYGm1)(2013-2014)	135(135+0+0)	17	21	16	49
CAYm6(LYGm2)(2012-2013)	116(116+0+0)	2	13	18	25

4.1. Enrolment Ratio (20)

Enrolment Ratio= $N1/N = 86\%$ (average during the previous three academic years)

Table B.4.1 Enrolment Ratio

	CAY 2018-2019	CAYm1 2017-2018	CAYm2 2016-2017
Sanctioned intake of the program (N)	138	138	138
Total number of students admitted in first year <i>minus</i> number of students migrated to other programs/institutions, plus no. of students migrated to this program (N1)	122	108	126
Enrolment Ratio = N1/N	0.88	0.78	0.91

4.2. Success Rate in the stipulated period of the program (20)

4.2.1. Success rate without backlogs in any semester/year of study (15)

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

Average SI = Mean of Success Index (SI) for past three batches = **0.58**

Success rate without backlogs in any semester/year of study = $15 \times \text{Average SI} = 8.7$

Table B.4.2.1 Success rate without backlogs

Item	Last Year of Graduate, LYG (2014-2018)	Last Year of graduate minus 1, LYGm1 (2013-2017)	Last Year of Graduate minus 2, LYGm2 (2012-2016)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	109	135	116
Number of students who have graduated without backlogs in the stipulated period	59	72	76
Success Index (SI)	0.54	0.53	0.66

4.2.2. Success rate with backlog in stipulated period of study (5)

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

Average SI = mean of Success Index (SI) for past three batches = **0.303**

Success rate = $5 \times \text{Average SI} = \mathbf{1.52}$

Table B.4.2.2 Success rate with backlogs

Item	Last Year of Graduate, LYG (2014-2018)	Last Year of Graduate minus 1, LYGm1 (2013-2017)	Last Year of Graduate minus 2, LYGm2 (2012-2016)
Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable	109	135	116
Number of students who have graduated with backlogs in the stipulated period	36	49	25
Success Index (SI)	0.33	0.36	0.22
Average Success Index	0.30		

4.3. Academic Performance in Second Year (10)

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

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

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

Table B.4.3 Second year academic performance

Academic Performance	CAYm1 (2017-2018)	CAYm2 (2016-2017)	CAYm3 (2015-2016)
Mean of CGPA or Mean Percentage of all successful students (X)	6.86	6.49	6.73
Total no. of successful students (Y)	123	109	106
Total no. of students appeared in the examination (Z)	123	109	106
API = $X * (Y/Z)$	AP1=6.86	AP2=6.49	AP3=6.73
Average API = $(AP1 + AP2 + AP3)/3$	6.69		

4.4. Placement, Higher Studies and Entrepreneurship (30)

Assessment Points = 30 × average placement

Table B.4.4a Placement, Higher Studies and Entrepreneurship data

Item	CAYm1 (2017- 2018)	CAYm2 (2016- 2017)	CAYm3 (2015- 2016)
Total No. of Final Year Students (N)	106	129	110
No. of students placed in companies or Government Sector (x)	59	90	98
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	10	13	3
No. of students turned entrepreneur in engineering/technology (z)	0	2	0
x + y + z =	69	105	101
Placement Index : (x + y + z)/N	P1=0.65	P2=0.81	P3=0.92
Average placement= (P1 + P2 + P3)/3	0.8		
Assessment Points = 30 × average placement	24		

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

Table B.4.4a Placement data for the 2014-2018 batch

B.Tech., EEE and 2014-2018

S.No.	Name of the student placed	Enrollment no.	Name of the Employer	Appointment letter reference no. with date
1.	S ABHISHEK	CB.EN.U4EEE14001	CONTINENTAL AG	Ref:2017/9-13 th Dec 2017
2.	ANJANA E	CB.EN.U4EEE14004	ACCENTURE	Dt.:15 Feb 2018
3.	M. ANKITHA	CB.EN.U4EEE14005	GE Digital	Dt.:13 th July 2017
4.	ARAVIND S	CB.EN.U4EEE14006	BIBOX	Dt.: Jun 18, 2018
5.	ARKALA PUNEETH SAI	CB.EN.U4EEE14009	TCS	Ref:TCSL/ Dt.06/10/2017
6.	DHARSHAN R	CB.EN.U4EEE14016	INFOSYS	HRD/3T/18-19/
7.	GANGA R	CB.EN.U4EEE14017	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 174, Dt.09.02.2018
8.	GUDA VENKATESHWAR REDDY	CB.EN.U4EEE14019	TCS	Ref:TCSL/Dt.06/10/2 017
9.	KARTHIC KRISHNA M	CB.EN.U4EEE14023	SHAPOORJI PALLONJI	Dt.:10 th Nov 2017
10.	K. KISHAN KUMAR	CB.EN.U4EEE14024	CONTINENTAL AG	Ref:2017/9-13 th Dec 2017
11.	KOUSHIK M	CB.EN.U4EEE14025	ACCENTURE	Dt.:15 Feb 2018
12.	MADHAN C	CB.EN.U4EEE14026	ACCENTURE	Dt.:15 Feb 2018
13.	MALIYE SRI PRANAV	CB.EN.U4EEE14027	MU SIGMA	Dt.:July 17,2017
14.	PRAGATHI MANOHAR	CB.EN.U4EEE14032	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 184, Dt.09.02.2018
15.	PRIYADHARSHINI G	CB.EN.U4EEE14033	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 185, Dt.09.02.2018
16.	RAHUL P J P	CB.EN.U4EEE14035	SOLITON	Dt.:23 rd Aug 2017

			TECHNOLOGIES	
17.	S RAJYA	CB.EN.U4EEE14036	SOLITON TECHNOLOGIES	Dt.:23 rd Aug 2017
18.	SABARIIS V S	CB.EN.U4EEE14037	INFOSYS	HRD/3T/18-19/
19.	SAKTHI S	CB.EN.U4EEE14039	TCS	Ref:TCSL/ Dt.06/10/2017
20.	SANTHOSH P	CB.EN.U4EEE14041	TCS	Ref:TCSL/ Dt.06/10/2017
21.	SHRUTHIP V	CB.EN.U4EEE14043	SOLITON TECHNOLOGIES	Dt.:23 rd Aug 2017
22.	SIVANANDHAN S	CB.EN.U4EEE14044	ACCENTURE	Dt.:15 Feb 2018
23.	SIVARAMAKRISHNAN R	CB.EN.U4EEE14045	ACCENTURE	Dt.:15 Feb 2018
24.	SRUTHI S	CB.EN.U4EEE14047	ACCENTURE	Dt.:15 Feb 2018
25.	SUDHAKARAN K	CB.EN.U4EEE14049	MU SIGMA	Dt.:July 17,2017
26.	VAISHAKH PRAKASH	CB.EN.U4EEE14050	MU SIGMA	Dt.:July 17,2017
27.	VAISHNAVI G	CB.EN.U4EEE14051	TCS	Ref:TCSL/ Dt.06/10/2017
28.	VIGNESWAR M	CB.EN.U4EEE14054	TCS	Ref:TCSL/ Dt.06/10/2017
29.	VIKHASH KARTHIK V M	CB.EN.U4EEE14055	TCS	Ref:TCSL/ Dt.06/10/2017
30.	K. VISHAL	CB.EN.U4EEE14057	INFOSYS	HRD/3T/18-19/
31.	RAHUL M S	CB.EN.U4EEE14058	TCS	Ref:TCSL/ Dt.06/10/2017
32.	REVATHI B	CB.EN.U4EEE14059	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 185, Dt.09.02.2018
33.	ABISHEK FRANKLIN M	CB.EN.U4EEE14102	MU SIGMA	Dt.:July 17,2017
34.	ARUN BALAJI D B	CB.EN.U4EEE14106	TCS	Ref:TCSL/ Dt.06/10/2017
35.	ASHWINI	CB.EN.U4EEE14108	AMAZON	-
36.	DEVESHWAR HARIHARAN	CB.EN.U4EEE14112	ORACLE	April 12,2017
37.	DHIVAGARA NARAYANAN V	CB.EN.U4EEE14114	TCS	Ref:TCSL/ Dt.06/10/2017
38.	JANANI SUNIL	CB.EN.U4EEE14116	ACCENTURE	Dt.:15 Feb 2018
39.	KASHREYA J	CB.EN.U4EEE14117	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 177, Dt.09.02.2018
40.	KEDAR JOSHI	CB.EN.U4EEE14118	TITAN	Dt.:21 st Dec 2017
41.	MERUGU NAGA PRUDHVI SAI	CB.EN.U4EEE14123	PRDC	-
42.	NAVEEN V	CB.EN.U4EEE14126	ACCENTURE	Dt.:15 Feb 2018
43.	PAVITHRA R	CB.EN.U4EEE14127	IBM	Dt.: Oct 30,2017
44.	PENMETS PAVAN RAVI VARMA	CB.EN.U4EEE14128	TCS	-
45.	PRASAANTH S	CB.EN.U4EEE14132	MU SIGMA	Dt.:July 17,2017
46.	R. PRASANNA	CB.EN.U4EEE14133	RENAULT NISSAN	Dt.:29 th Nov, 2017
47.	PRIYANKA D	CB.EN.U4EEE14134	ACCENTURE	Dt.:15 Feb 2018
48.	SAMEER SANJEEVI	CB.EN.U4EEE14137	TCS	Ref:TCSL/ Dt.06/10/2017
49.	SHUMITHA A	CB.EN.U4EEE14140	CONTINENTAL AG	Ref:2017/9-13 th Dec 2017
50.	SUTHESH K	CB.EN.U4EEE14147	KNOWLEDGE LENS	HRD/BLR/HR/2222 Dt.14 Sep, 2017
51.	SWATHY S	CB.EN.U4EEE14148	ACCENTURE	Dt.:15 Feb 2018
52.	VAMSI SAI NARINDI	CB.EN.U4EEE14149	TCS	Ref:TCSL/ Dt.06/10/2017
53.	VARSHINI K	CB.EN.U4EEE14150	ACCENTURE	Dt.:15 Feb 2018
54.	VIGNESH CHENNI THIAGARAJAN	CB.EN.U4EEE14151	TCS	Ref:TCSL/ Dt.06/10/2017
55.	VIGNESH K S	CB.EN.U4EEE14152	SOLITON TECHNOLOGIES	Dt.:23 rd Aug 2017
56.	VIGNESHKUMAR S	CB.EN.U4EEE14153	MU SIGMA	Dt.:July 17,2017
57.	VISWANATH A P	CB.EN.U4EEE14154	VALEO INDIA (P)	Ref:

			LTD.	VIPL/HR/GEEDS/VIA S2/04 Dt.: Dec 19,2017
58.	BALAGOPAL U K	CB.EN.U4EEE14157	ROBERT BOSCH	Ref:RBEI/HRL/2018/ 170, Dt.09.02.2018
59.	BATTA LAKSHMI	CB.EN.U4EEE14158	INFOSYS	HRD/3T/18-19/

Table B.4.4b Placement data for the 2013-2017 batch

B.TECH., EEE AND 2013-2017				
S.No.	Name of the student placed	Enrollment no.	Name of the Employer	Appointment letter reference no. with date
1.	AFRIENA S A	CB.EN.U4EEE13002	L&T CONSTRUCTION	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 89, Dt. 23.01.2017
2.	AKASH K	CB.EN.U4EEE13004	CTS	Dt.8 th Dec, 2016
3.	AKSHYA S	CB.EN.U4EEE13005	L&T	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 109, Dt. 7.03.2017
4.	ANJALI RAVINDRAN	CB.EN.U4EEE13007	ERICSSON	Dt.January 31,2017
5.	ANUSHA S	CB.EN.U4EEE13008	INFOSYS	HRD/3T/16-17/
6.	BALA COUMARANE V	CB.EN.U4EEE13011	INFOSYS	HRD/3T/16-17/
7.	BATTULA KARTHIK	CB.EN.U4EEE13012	TCS	Ref; Ref:TCSL/ Dt.07/12/2016
8.	DEETY SAI VENKATA UMESH	CB.EN.U4EEE13015	FIITJEE	Ref:Maths/20170041 65 Date: March 28,2017
9.	DHILIP S	CB.EN.U4EEE13017	RESEARCH FELLOW at C.V.RAMAN, BANGALORE	Ref; Ref:TCSL/ Dt.07/12/2016
10.	DINO JOHNSON J	CB.EN.U4EEE13018	CRAFTSMAN AUTOMATION	Dt.Apr 19,2017
11.	DURISETI V R R SATYA SAMEER	CB.EN.U4EEE13019	ERICSSON	Dt.January 31,2017
12.	GEORGE DANIEL LIVINGSTONE	CB.EN.U4EEE13020	TCS	Ref; Ref:TCSL/ Dt.07/12/2016
13.	GOPINATH A R	CB.EN.U4EEE13021	COGNIZANT	Dt.8 th Dec, 2016
14.	HARI MANOJ	CB.EN.U4EEE13023	TOSHIBA	Dt.3 rd May, 2017
15.	V JAI SURIYA	CB.EN.U4EEE13024	CONTINENTAL AUTOMOTIVE	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 117, Dt. 7.03.2017
16.	KARRI VENKATA SAI PRANAV	CB.EN.U4EEE13026	ERICSSON	Dt.January 31,2017
17.	KARTHIKEYAN M	CB.EN.U4EEE13027	TECH MAHINDRA	1488068/ELTP/2017 Dt. 31 st Jan 2017
18.	KEERTHI S	CB.EN.U4EEE13028	ERICSSON	Dt.January 31,2017
19.	KESAVADAS S	CB.EN.U4EEE13029	L&T CONSTRUCTION	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 117, Dt. 23.01.2017
20.	LEKHA PREETHA P	CB.EN.U4EEE13030	MICROLAND	Dt.: 17 April 2017
21.	NALLA VALI BALA PRANAYA	CB.EN.U4EEE13033	RENAULT-NISSAN	Dt.11 th Jan 2017
22.	NEHA L JAIN	CB.EN.U4EEE13034	ERICSSON	Dt.January 31,2017
23.	NITHYA R MENON	CB.EN.U4EEE13035	ERICSSON	Dt.January 31,2017
24.	PRITHIVIRAJ SIRANKUMAR	CB.EN.U4EEE13039	ERICSSON	Dt.January 31,2017
25.	PRIYANKA R	CB.EN.U4EEE13040	FIITJEE	Ref:Maths/20170041 65 Date: March 28,2017
26.	PUSARAPU RAJENDRA	CB.EN.U4EEE13041	GRADUATE ENGINEER TRAINEE,AMRITA HOSPITAL,FARIDA	Dt. Nov 1 ST , 2017

			BAD	
27.	R S ABHI KRISHNA	CB.EN.U4EEE13042	INFOSYS	HRD/3T/16-17/
28.	B. RAMESH KRISHNAN	CB.EN.U4EEE13044	VDART	Dt. 02.06.2017
29.	RANJITH KUMAR G	CB.EN.U4EEE13045	ROBERT BOSCH	Ref:RBEI/HRL/2017/40, Dt.22.02.2017
30.	A SAKTHI SRINIDHI	CB.EN.U4EEE13047	CTS	Dt.8 th Dec, 2016
31.	SHANKARANARAYANAN P V	CB.EN.U4EEE13051	TECH MAHINDRA	1488068/ELTP/2017 Dt. 31 st Jan 2017
32.	SINGUDASU ANUPAM SANDEEP	CB.EN.U4EEE13053	CONTINENTAL AUTOMOTIVE	Ref:2016/5, Dt.19.10.2016
33.	SIRPHI M	CB.EN.U4EEE13054	TCS	Ref; Ref:TCSL/ Dt.07/12/2016
34.	SRI PAVANI G	CB.EN.U4EEE13056	CTS	Dt.8 th Dec, 2016
35.	C SRIRAM	CB.EN.U4EEE13057	CONTINENTAL AUTOMOTIVE	Ref:2016/5, Dt.19.10.2016
36.	S. SRIRAM	CB.EN.U4EEE13058	INFOSYS	HRD/3T/16-17/
37.	SUBHAM PANDA	CB.EN.U4EEE13060	INFOSYS	HRD/3T/16-17/
38.	SURAJ R GUPTA	CB.EN.U4EEE13061	CTS	Dt.8 th Dec, 2016
39.	VIGNESH D	CB.EN.U4EEE13063	VDART	Dt. 02.06.2017
40.	VIGNESH K	CB.EN.U4EEE13064	INFOSYS	HRD/3T/16-17/
41.	VIGNESH T	CB.EN.U4EEE13065	CTS	Dt.8 th Dec, 2016
42.	VIGNESHWAR S.	CB.EN.U4EEE13066	VDART	Dt. 02.06.2017
43.	VISHAKH SHRIKUMAR NAIR	CB.EN.U4EEE13069	INFOSYS	HRD/3T/16-17/
44.	ABHIJITH VARMA	CB.EN.U4EEE13101	BOSCH, COIMBATORE	Ref:RBEI/HRL/2017/63, Dt.22.02.2017
45.	ABHISHEK S	CB.EN.U4EEE13103	TCS, PUNE	Ref; Ref:TCSL/ Dt.07/12/2016
46.	ADARSH NK	CB.EN.U4EEE13104	COGNIZANT, CHENNAI	Dt.8 th Dec, 2016
47.	AJITH S	CB.EN.U4EEE13105	ACCENTURE, CHENNAI	Employee ID. 11521222
48.	AJITH SIVADAS	CB.EN.U4EEE13106	INFOSYS, KERALA	HRD/3T/16-17/
49.	AKSHAY B	CB.EN.U4EEE13107	ERRICSON	Dt.January 31,2017
50.	AKSHAYA V	CB.EN.U4EEE13108	COGNIZANT, CHENNAI	Dt.8 th Dec, 2016
51.	ANUSHA KUMAR	CB.EN.U4EEE13110	COGNIZANT, CHENNAI	Dt.8 th Dec, 2016
52.	AREMANDLA SURENDRA	CB.EN.U4EEE13111	GMCCO	Dt.09.03. 2017
53.	ARUN PRASATH B R	CB.EN.U4EEE13112	MSC CREWING SERVICES, CHENNAI	-
54.	BARANIDHARAN S	CB.EN.U4EEE13113	COGNIZANT, CHENNAI	Dt.8 th Dec, 2016
55.	DHARANI S	CB.EN.U4EEE13115	AKT HIGHER SECONDARY SCHOOL, SALEM	-
56.	GOPALAKRISHNAN P	CB.EN.U4EEE13118	L&T CONSTRUCTION	Ref:L&T/CONSTRUCTION/GET2017/ELEC/117, Dt. 7.03.2017
57.	GURUPRASAD A	CB.EN.U4EEE13119	COGNIZANT, CHENNAI	Dt.Nov 1, 2017
58.	HARINE M	CB.EN.U4EEE13120	COGNIZANT, COIMBATORE	Dt.8 th Dec, 2016
59.	ILLAKIYA V	CB.EN.U4EEE13121	COGNIZANT, COIMBATORE	Dt.8 th Dec, 2016
60.	JANANI S	CB.EN.U4EEE13122	COGNIZANT, COIMBATORE	Dt.8 th Dec, 2016
61.	JANARANJINI C	CB.EN.U4EEE13123	COGNIZANT, CHENNAI	Dt.8 th Dec, 2016
62.	JAYAPRIYA M	CB.EN.U4EEE13124	ERICSSON, BANGALORE	Dt.January 31,2017

63.	JONES ALDO G	CB.EN.U4EEE13125	I-EXCEED, BANGALORE	Dt.28 th Nov,2016
64.	LANKA SANTHOSH AKHIL	CB.EN.U4EEE13127	L&T CONSTRUCTION	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 117, Dt. 07.03.2017
65.	MIKKILI CHARISHMA	CB.EN.U4EEE13129	ERICSSON, BANGALORE	Dt.January 31,2017
66.	MURALI SIVA K	CB.EN.U4EEE13130	ROBERT BOSCH	Ref:RBEI/HRL/2017/ 27, Dt.22.02.2017
67.	MUTHU VALLIAPPAN K	CB.EN.U4EEE13131	CTS, CHENNAI	Dt.8 th Dec, 2016
68.	NALLAGARI PRADEEP REDDY	CB.EN.U4EEE13132	ERICSSON, BANGALORE	Dt.January 31,2017
69.	NETHAJHI K M	CB.EN.U4EEE13134	SITEL PVT LTD, CHENNAI	Employee ID. E 1085491
70.	NIKITA A THARAKAN	CB.EN.U4EEE13135	COGNIZANT , COIMBATORE	Dt.8 th Dec, 2016
71.	NITHIN VINOD V	CB.EN.U4EEE13136	INFOSYS , KERALA	HRD/3T/16-17/
72.	PARTHASARATHI VENKATESAN	CB.EN.U4EEE13137	ERICSSON, BANGALORE	Dt.January 31,2017
73.	PARTHIPAN K	CB.EN.U4EEE13138	CUMI	Dt.15 Feb 2017
74.	PRAJNA CAUVERY KP	CB.EN.U4EEE13140	EDUSEVA, COIMBATORE	-
75.	RAAHUL KM	CB.EN.U4EEE13141	L&T, COIMBATORE	-
76.	RAHUL B	CB.EN.U4EEE13142	BILLION TAGS, CHENNAI	Employee ID. 38777
77.	RAM ARAVIND R	CB.EN.U4EEE13143	SIFANG AUTOMATION, BANGALORE	Employee ID. C-1016
78.	SATHVIK S	CB.EN.U4EEE13149	CATERPILLAR , CHENNAI	Dt.16.12.2016
79.	SHASHANK YADAV	CB.EN.U4EEE13150	CRAFTSMAN AUTOMATION, BANGALORE	Dt. April 19,2017
80.	SHYAM PRAKASH	CB.EN.U4EEE13151	SEMA BEIRYT TECHNICAL SOLUTION L.T.D., DUBAI	-
81.	SREE RAM P PILLAI	CB.EN.U4EEE13153	TECH MAHINDRA, CHENNAI	1488068/ELTP/2017 Dt. 31 st Jan 2017
82.	SREELAKSHMI A	CB.EN.U4EEE13154	QUESS CORP, BANGALORE	Dt. Nov 28,2016
83.	SRI JANANI R	CB.EN.U4EEE13155	CONTINENTAL AUTOMOTIVE COMPONENTS PVT. LTD., BANGALORE	Ref:2016/5, Dt.19.10.2016
84.	SUHAAS N	CB.EN.U4EEE13157	ERICSSON , BANGALORE	Dt. January 31,2017
85.	SURENDHAR R	CB.EN.U4EEE13158	ACCENTURE, CHENNAI	-
86.	SURIYA PRAKASH S	CB.EN.U4EEE13159	CHANGEPOND TECHNOLOGIES PVT LTD, CHENNAI	-
87.	SURYA M	CB.EN.U4EEE13160	L&T CONSTRUCTION	Ref:L&T/CONSTRUCT ION/GET2017/ELEC/ 117, Dt. 07.03.2017
88.	SUSHMITHA DEVENDIRAN	CB.EN.U4EEE13161	COGNIZANT	Dt.8 th Dec, 2016
89.	VENKATESH R	CB.EN.U4EEE13164	CRAFTSMAN AUTOMATION , COIMBATORE	Dt. April 19, 2017
90.	VIJAY SREENIVAS	CB.EN.U4EEE13166	UNIVERSAL ELECTRO ENGINEERING , BAHARIN	-

Table B.4.4c Placement data for the 2012-2016 batch

B.TECH., EEE AND 2012-2016				
S.No.	Name of the student placed	Enrollment no.	Name of the Employer	Appointment letter reference no. with date
1.	ABHISHEK SABLOK	CB.EN.U4EEE12001	ROBERT BOSCH	Ref:RBEI/HRL/2016/088, Dt.17.02.2016
2.	AKSHAYA H	CB.EN.U4EEE12002	COGNIZANT	Dt.06-Apr, 2016
3.	ANAND S	CB.EN.U4EEE12005	L&T	Ref:TIIC/HR-HQ/GET-2016-Electrical & Electronics-13, Dt. 05.01.2016
4.	ANANT NARULA	CB.EN.U4EEE12006	FRACTAL ANALYTICS	Dt.30-12- 2015
5.	ANJALI ANANDRAO GAJBE	CB.EN.U4EEE12007	CTS	Dt.06-Apr, 2016
6.	ARAVIND R	CB.EN.U4EEE12009	KPIT	Dt.14-Oct, 2015
7.	ARTHI N	CB.EN.U4EEE12010	CTS	Dt.06-Apr, 2016
8.	ARUN KUMAR R	CB.EN.U4EEE12011	TATA ELXSI	Dt.24-Aug, 2015
9.	ASHWIN KUMAR U	CB.EN.U4EEE12013	ROBERT BOSCH	Ref:RBEI/HRL/2016/122, Dt.18.02.2016
10.	BRINDHA M	CB.EN.U4EEE12014	CTS	Dt.06-Apr, 2016
11.	DIVYA MURALIDHARAN	CB.EN.U4EEE12015	ERICSSON	Ref: EGI/HR-12:<KAL>/1712/UEN , Dt.01.12.2015
12.	GANAPATHY NATHAN K	CB.EN.U4EEE12016	CTS	Dt.06-Apr, 2016
13.	GOKULESHVAR K	CB.EN.U4EEE12017	BOSCH	Ref:RBEI/HRL/2016/076, Dt.17.02.2016
14.	HAREESH K	CB.EN.U4EEE12019	ROBERT BOSCH	Ref:RBEI/HRL/2016/092, Dt.17.02.2016
15.	HARISANKAR S	CB.EN.U4EEE12020	ROBERT BOSCH	Ref:RBEI/HRL/2016/118, Dt.18.02.2016
16.	HITHARTH P GOPIKRISHNAN	CB.EN.U4EEE12021	EY GDN	Dt.:Nov 06,2015
17.	HRISHIKESH K	CB.EN.U4EEE12022	CONTINENTAL AG	Ref:email, Dt.22.03.2016
18.	KALDINDI PRATHYUSHA	CB.EN.U4EEE12023	TATA ELXSI	Dt.24 Aug 2015
19.	KAVYA KARAT	CB.EN.U4EEE12025	CTS	Dt.06-Apr, 2016
20.	KRITHIKA PREMKUMAR	CB.EN.U4EEE12026	TATA ELXSI	Dt.24 Aug 2015
21.	LOLITE LAWRENCE	CB.EN.U4EEE12027	CTS	Dt.06-Apr, 2016
22.	MANIKANDAN B	CB.EN.U4EEE12028	WIPRO	Dt. 29 Dec 2015
23.	PESALA GEETHA SAI LAKSHMI	CB.EN.U4EEE12030	EY GDN	Dt.:Nov 06,2015
24.	POOJA RAJAN	CB.EN.U4EEE12031	ERICSSON	Ref: EGI/HR-12:<KAL>/1712/UEN , Dt.01.12.2015
25.	PRIYADARSHINI R	CB.EN.U4EEE12032	ROBERT BOSCH	Ref:RBEI/HRL/2016/125, Dt.18.02.2016
26.	RAHUL SAJEEV	CB.EN.U4EEE12034	ERICSSON	Ref: EGI/HR-12:<KAL>/1712/UEN , Dt.01.12.2015
27.	RAJALAKSHMI C	CB.EN.U4EEE12035	CTS	Dt.06-Apr, 2016
28.	RAVI SHANKAR P	CB.EN.U4EEE12036	ROBERT BOSCH	Ref:RBEI/HRL/2016/102, Dt.17.02.2016
29.	SAMUDRALA SRIKAR	CB.EN.U4EEE12037	ERICSSON	Ref: EGI/HR-

				12:<KAL>/1712/UEN , Dt.01.12.2015
30.	SARADA PREETHI C	CB.EN.U4EEE12038	ROBERT BOSCH	Ref:RBEI/HRL/2016/ 104, Dt.18.02.2016
31.	SARAVANAN S	CB.EN.U4EEE12039	ROBERT BOSCH	Ref:RBEI/HRL/2016/ 112, Dt.18.02.2016
32.	SNEHA R MENON	CB.EN.U4EEE12041	ERICSSON	Ref: EGI/HR- 12:<KAL>/1712/UEN , Dt.01.12.2015
33.	SREELAKSHMI P	CB.EN.U4EEE12042	BOSCH	Ref:RBEI/HRL/2016/ 091, Dt.17.02.2016
34.	SUBHASHREE R	CB.EN.U4EEE12043	ROBERT BOSCH	Ref:RBEI/HRL/2016/ 091, Dt.17.02.2016
35.	SUBRAMANIAM S	CB.EN.U4EEE12044	TATA ELXSI	Dt.24 Aug 2015
36.	SUSHEN S	CB.EN.U4EEE12045	CTS	Dt.06-Apr, 2016
37.	SWETHA P	CB.EN.U4EEE12046	ERRICSON	Ref: EGI/HR- 12:<KAL>/1712/UEN , Dt.01.12.2015
38.	UDHAYARAJ R	CB.EN.U4EEE12047	GAMESA	Dt.07-06-2016
39.	VARUN ARVIND R	CB.EN.U4EEE12049	BOSCH	Ref:RBEI/HRL/2016/ 074, Dt.17.02.2016
40.	VARUN INDRA PRASAD V	CB.EN.U4EEE12050	Mu SIGMA	Dt.09-07-2015
41.	VENNILA B	CB.EN.U4EEE12051	TATA ELXSI	Dt.24 Aug 2015
42.	VIBIN RAJ R	CB.EN.U4EEE12052	SYSTEM ENGINEER, TCS	TCSL/CT201517..,Dt. 23.09.2015
43.	VIGNESH M	CB.EN.U4EEE12053	EP.TECH	-
44.	VIGNESH VENKITESWARAN	CB.EN.U4EEE12054	STRATEGY MANAGER, TATA ELXSI	Dt.24 Aug 2015
45.	VIKNESH BABU S	CB.EN.U4EEE12055	SANKALP SEMICONDUCTORS	Ref:sankalp/offer/20 16-17, Dt.01-06- 2016
46.	NEKKANTI SAHANI	CB.EN.U4EEE12057	ERICSSON	Ref: EGI/HR- 12:<KAL>/1712/UEN , Dt.01.12.2015
47.	PILLARI KUSHALA	CB.EN.U4EEE12058	CTS	Dt.06-Apr, 2016
48.	BEZAWADA SINDHU	CB.EN.U4EEE12059	CTS	Dt.06-Apr, 2016
49.	REKAPALLI V S SHASANK	CB.EN.U4EEE12060	L&W CONSTRUCTION	Ref:TIIC/HR- HQ/GET-2016- Electrical & Electronics-..., Dt. 05.01.2016
50.	V S ABINAV SWAMINATH	CB.EN.U4EEE12101	CTS	Dt.06-Apr, 2016
51.	ADITHYA P	CB.EN.U4EEE12102	L&T CONSTRUCTION	Ref:TIIC/HR- HQ/GET-2016- Electrical & Electronics-....., Dt. 05.01.2016
52.	AISWARYA S NAIR	CB.EN.U4EEE12103	INFOSYS	Ref:HRD/3T/16-17/
53.	AMIRTHVARSHANI R	CB.EN.U4EEE12104	TATA ELXSI	Dt.24 Aug 2015
54.	ANEESH BHAT	CB.EN.U4EEE12105	MU SIGMA	Dt.09-07-2015
55.	ARAVIND E	CB.EN.U4EEE12106	KPIT	Dt.14 Oct 2015
56.	ARAVIND MADHAVAN R	CB.EN.U4EEE12107	ROBERT BOSCH	Ref:RBEI/HRL/2016/ 086, Dt.17.02.2016
57.	ARUN AGORAM C	CB.EN.U4EEE12109	Mu SIGMA	Dt.09-07-2015

58.	ARUN NATH G	CB.EN.U4EEE12110	COGNIZANT	Dt.06-Apr, 2016
59.	ASWIN RAJ C	CB.EN.U4EEE12111	KPIT	Dt.14 Oct 2015
60.	DHEERAJ R V	CB.EN.U4EEE12113	INFOSYS	Ref:HRD/3T/16-17/
61.	GOKUL C	CB.EN.U4EEE12114	KPIT	Dt.14 Oct 2015
62.	HARIKRISHNAN A M	CB.EN.U4EEE12115	TATA ELXSI	Dt.24 Aug 2015
63.	HARITHAA S	CB.EN.U4EEE12116	TATA ELXSI	Dt.24 Aug 2015
64.	KARTHICK G	CB.EN.U4EEE12117	KPIT	Dt.14 Oct 2015
65.	KAUSHIK S	CB.EN.U4EEE12118	CTS	Dt.06-Apr, 2016
66.	KRISHNA KUMAR B	CB.EN.U4EEE12119	TCS	TCSL/CT201517..,Dt. 23.09.2015
67.	KRITHIKA R	CB.EN.U4EEE12120	KPIT	Dt.14 Oct 2015
68.	KUNGUMA ABISHEK P	CB.EN.U4EEE12121	COGNIZANT	Dt.06-Apr, 2016
69.	LINGESH R	CB.EN.U4EEE12122	ORACLE	Dt.27.04.2016
70.	MADHUMITHA R	CB.EN.U4EEE12123	ROBERT BOSCH	Ref:RBEI/HRL/2016/106, Dt.18.02.2016
71.	MANOJ KIRAN M	CB.EN.U4EEE12125	EY GDN	Dt.:Nov 06,2015
72.	S MANOJ KRISHNA	CB.EN.U4EEE12126	BLUE STAR	Ref:Email Dt. 31.12.2015
73.	MANORANJITH A P	CB.EN.U4EEE12127	ROBERT BOSCH	Ref:RBEI/HRL/2016/080, Dt.17.02.2016
74.	MONANGI AVINASH	CB.EN.U4EEE12128	ZOHO	-
75.	MUTHURAAJ A R	CB.EN.U4EEE12130	KPIT	Dt.14 Oct 2015
76.	NAKUL K PILLAI	CB.EN.U4EEE12131	PRDC	Ref:PRDC/OFL/2016-17 Dt.8.06.2016
77.	NUKALA VENKATA SAI KRISHNA AVINASH	CB.EN.U4EEE12132	L&T CONSTRUCTION	Ref:TIIC/HR-HQ/GET-2016-Electrical - 39, Dt. 05.01.2016
78.	PRAVEEN KUMAR N	CB.EN.U4EEE12133	KPIT	Dt.14 Oct 2015
79.	PRAVEENA P	CB.EN.U4EEE12134	TATA ELXSI	Dt.24 Aug 2015
80.	PURNIMAA N	CB.EN.U4EEE12135	KPIT	Dt.14 Oct 2015
81.	RAHUL VIJAYKUMAR	CB.EN.U4EEE12136	CTS	Dt.06-Apr, 2016
82.	RAMYA SUNDARAM B	CB.EN.U4EEE12138	MU SIGMA	Dt.09-07-2015
83.	CHETTITHODI SACHIN RAVI	CB.EN.U4EEE12139	ADANI POWER	Dt.29.01.2016
84.	SANTHANU P J	CB.EN.U4EEE12142	L&T CONSTRUCTION	Ref:L&T/CONSTRUCTION/GET2016/ELEC/106, Dt. 17.02.2016
85.	SHARAN PRASAD	CB.EN.U4EEE12143	HYUNDAI	Ref:HMI/HR/MPM/2016/02/400, Dt.25.02.2016
86.	SHYAM KRISHNAN	CB.EN.U4EEE12144	MU SIGMA	Dt.09-07-2015
87.	SUJITH P	CB.EN.U4EEE12146	GOFRUGAL	-
88.	VEGI KODANDA SATYA MUKUNDA	CB.EN.U4EEE12150	KPIT	Dt.14 Oct 2015
89.	V VENNILA	CB.EN.U4EEE12151	SOLITON	Dt.05.11.2015
90.	VIDHYAA R	CB.EN.U4EEE12152	VDART SOFTWARE	Date.20.01.2016
91.	VIGNESH S	CB.EN.U4EEE12153	SPORTS LEADER SWIMMING-DECATHLON	-
92.	VIJAY SURYA S	CB.EN.U4EEE12154	COGNIZANT	Dt.06-Apr, 2016
93.	YANTRAPATI BHARAT SAI TEJA	CB.EN.U4EEE12155	COGNIZANT	Dt.06-Apr, 2016
94.	PALLUKURI MONIKA	CB.EN.U4EEE12156	ERICSSON	Ref: EGI/HR-12:<KAL>/1712/UEN / Dt.01.12.2015
95.	BUSETTY BHARATH	CB.EN.U4EEE12157	COGNIZANT	Dt.06-Apr, 2016
96.	CHINNI SUSHYANTH	CB.EN.U4EEE12158	ZOHO	-
97.	PADALA LEELA VEERA	CB.EN.U4EEE12160	ERICSSON	Ref: EGI/HR-

	NAGENDRA REDDY			12:<KAL>/1712/UEN , Dt.01.12.2015
98.	HARIKA	CB.EN.U4EEE12511	CISCO	-

4.5. Professional Activities (20)

4.5.1. Professional societies/chapters and organizing engineering events (5)

Table 4.5.1a AEEE Events for the academic year 2017 - 2018

S.No.	Event Organized	Resource Person	Date	No of participants/ attendees
1.	Inphase'16	Freshers day - students event	20-07-2017	350
2.	Workshop on 'Circuit Simulation using SPICE'	Mr. R.Ranjith Mr.N.Krishna Prakash Department of EEE	31-07-2018	56
3.	Lecture on 'Soft Computing Applications in Power Systems'	Dr.S.Balamurugan Associate Professor/EEE	29-08-2017	40
4.	Engineers Day Celebration	Dr.K.C.Sindhu Thampatty Chairperson/EEE	15-09-2017	220
5.	Workshop on 'Design & Development of Small Scale Embedded Systems'	Mr. R.Ranjith Mr.N.Krishna Prakash Department of EEE	27-10-2017 28-10-2017	46
6.	Workshop on 'PCB design using EDA tool'	Mr. R.Ranjith Mr.N.Krishna Prakash Department of EEE	10-01-2018	32
7.	Workshop on Cloud based Industrial Automation System'	Dr.V.Ananthanarayanan Department of CSE Mr.K.P.Peeyush Department of ECE	19-01-2018 20-01-2018	45
8.	Lecture on 'Nanocomposites for Dielectric & Energy Storage Applications'	Dr.Kavitha Assistant Professors (Sr.Gr.) Department of EEE	01-03-2018	18
9.	Peer2Peer on Wireless line following report	Students Event	15-03-2018	36
10.	Workshop on 'Introduction to Python'	Mr.S.Prasanth	30-04-2018	14
11.	Adieu'18	Farewell - Students Event	13-04-2018	350

Table 4.5.1b AEEE Events for the academic year 2016 - 2017

S.No.	Event Organized	Resource Person	Date	No of participants/ attendees
1.	Workshop on "Analog Circuit Design using EDA Tools"	Mr.N.Krishna Prakash, Mr.A.Suyampulingam, Assistant Professor (Sr.Gr.) Department of EEE	30-07-2016	55
2.	Inphase'16	Freshers day - students event	06-08-2016	350
3.	Introductory Training Program on "LATEX"	Dr.O.V.Ramanamurthy Dr.T.Ananthan Assistant Professor (Sr.Gr.) Department of EEE	06-09-2016	26
4.	Engineers Day Celebration	Dr.K.C.Sindhu Thampatty Chairperson/EEE	15-09-2016	250
5.	Workshop on 'Introduction to LABVIEW'	Mr.T.Prabu Mr.N.Kathiravan Assistant Professors / EEE	24-09-2016	32
6.	Introduction to PIC microcontrollers using Embedded C	Mr.A.Suyampulingam Mr.R.Ranjith Mr.N.Krishna Prakash Assistant Professors / EEE	30-09-2016 01-10-2016	24
7.	Peer2Peer on Semi-autonomous robots	Students Event	11-10-2016	55

8.	Lecture on 'Automotive embedded Systems'	Mr.N.Krishna Prakash Assistant Professor (Sr.Gr.) Department of EEE	02-11-2016	28
9.	Workshop on 'Embedded System Design using Arduino'	Mr. R.Ranjith Assistant Professor/EEE	17-12-2016 18-12-2016	46
10.	Lecture on 'Introduction to Soft Computing Applications'	Ms. Prasanna Vadana, Assistant Professor (Sr.Gr.) Department of EEE	10-01-2017	23
11.	Introduction to MATLAB	Ms.P.Maya Assistant Professor (Sr.Gr.) Department of EEE	03-02-2017	42
12.	Introduction to MATLAB Simulink	Ms.M.Jisma Assistant Professor (Sr.Gr.) Department of EEE	17-03-2017	34
13.	Adieu'17	Farewell - Students Event	04-05-2017	350

4.5.2. Publication of technical magazines, newsletters, etc. (5)



Figure B.4.5.2a Departmental magazine



Figure B.4.5.2b College magazine (<https://www.amrita.edu/school/engineering/coimbatore/amritadhwani>)



Figure B.4.5.2c College news letter

(<https://www.amrita.edu/school/engineering/newsletter>)

4.5.3 Participation in inter-institute events by students of the program of study (10)

Student Exchange Details:

Table 4.5.3a Students under exchange programme

2016			
Sl. No.	Name of the student	Host Institution	Semester
1.	Subhashree	University of Paderborn, Germany	Spring 2016
2.	C Arun Agoram (EUETIB)	UPC, Spain	
3.	P Adithya (EUETIB)	UPC, Spain	
4.	Varun Arvind R	Politecnico di Milano, Italy	
2015			
1.	Kruphalan Tamilselva	KTH, Sweden	Spring 2015
2.	Kuralamudhan Arutselvan	KTH, Sweden	
Dual Programme			
2017			
Sl. No.	Name of the student	Host Institution	Semester
1.	Varahagiri Venkata Ramya EEE (Embedded System)	University of New Mexico, USA	2017
KTH 3+2			
2018			
Sl. No.	Name of the student	Host Institution	Semester
1.	Hareesh B	KTH Sweden	2018
2.	S Sathiya Lingam		
2016			
1.	Sudakshin	KTH Sweden	2016
2.	Somasundaram		
3.	Ranjithh Raj R		
4.	Rohith Raj R		
5.	Ajay Sriram		
2015			
1.	Nieraj.R.B	KTH Sweden	2015

Table 4.5.3b Participation in inter institute events by 2018-2022 batch

Sl. No	Roll No.	Name	Achievements
1	CB.EN.U4EEE18118	Hari Krishna J	Mine Sweeper, Technical, Anokha 2019: First
2	CB.EN.U4EEE18118	Hari Krishna J	ROBOIGNITERS, Technical, Anokha 2019 : Participated
3	CB.EN.U4EEE18118	Hari Krishna J	Embedded System Design Using CC3200-IOT, Technical, Anokha 2019: Participated
4	CB.EN.U4EEE18144	Roobinraj S	Mine Sweeper, Technical, Anokha 2019: First
5	CB.EN.U4EEE18144	Roobinraj S	Counterpoise, Technical, Anokha 2019: First
6	CB.EN.U4EEE18144	Roobinraj S	Innover, Technical, Anokha 2019 : Third
7	CB.EN.U4EEE18144	Roobinraj S	ROBOIGNITERS, Technical, Anokha 2019: Participated
8	CB.EN.U4EEE18133	Kiruthik Karun	ROBOIGNITERS, Technical, Anokha 2019: Participated
9	CB.EN.U4EEE18133	Kiruthik Karun	Innover, Technical, Anokha 2019: Third
10	CB.EN.U4EEE18133	Kiruthik Karun	Mine Sweeper, Technical, Anokha 2019: First
11	CB.EN.U4EEE18133	Kiruthik Karun	Counterpoise, Technical, Anokha 2019: First
12	CB.EN.U4EEE18145	Sala Chaitanya	Mine Sweeper, Technical, Anokha 2019: First
13	CB.EN.U4EEE18145	Sala Chaitanya	Counterpoise, Technical, Anokha 2019: First
14	CB.EN.U4EEE18162	Vishal Khanna	Mine Sweeper, Technical, Anokha 2019: Third

Table 4.5.3c Participation in inter institute events by 2017-2021 batch

Sl. No.	Roll No.	Name	Achievements
1.	CB.EN.U4EEE17026 CB.EN.U4EEE17003	Kaushik Shankar A Ajay Kumar N	BLAISTOISE: Fire fighting robot competition 2018: Won 3 rd place
			IEEE National level project contest held at Mangalam college of Engineering, Kottayam, Kerala 2018: Won 6 th place
2.	CB.EN.U4EEE17003	Jai Balajee S	Minesweeper Anokha'19 : Participated
3.	CB.EN.U4EEE17013	Bharatvaj S	COLLOSEUM 18-National Fest SASTRA : Participated Revels 18-Manipal-Football and 400mts(4) and 800mts(4) : Participated
4.	CB.EN.U4EEE17010	Ashwin Kumar V	Revels 18-Manipal-Javelin throw : Won 2 nd Place
5.	CB.EN.U4EEE17037	Nitheeshwaran	66th Senior National Volley-ball tournament : Participated State level volleyball championship: Runners Intercampus volleyball tournament : Runners
6.	CB.EN.U4EEE17060	L Venkatesh	REVELS'19-Cricket tournament : Qualified to semi-finals
7.	CB.EN.U4EEE17055	R.Surya	Cube Sat, Yugam, 2018 : Won 3 rd Place
8.	CB.EN.U4EEE17007 CB.EN.U4EEE17043 CB.EN.U4EEE17007 CB.EN.U4EEE17038	Annirudh D. Pruthvi Ram R. Kousik Harish S. Nithin Revanth M.	Buildatrix, Anokha 2019 : Won 3 rd Place
9.	CB.EN.U4EEE17106	Annie Evangelene E	Digital forensics workshop, organized by Anokha-2018, ASE, Coimbatore between 22nd and 24th

			February 2018 : Participated
10.	CB.EN.U4EEE17116	Dhanya Sree E	Cyber security workshop organized by NIT, Trichy on 4th March 2018 : Participated
11.	CB.EN.U4EEE17116	Dhanya Sree E	Digital forensics workshop, organized by Anokha-2018,ASE, Coimbatore between 22nd and 24th February 2018 : Participated
12.	CB.EN.U4EEE17131	Paarveendan Y K	Introduction to Raspberry pi and applications development workshop organized by Anokha-2019, ASE, Coimbatore from 14th to 16th February 2019 : Participated
13.	CB.EN.U4EEE17133	Pechetti Bhavana	PCB Fabrication workshop organized by Enthu technologies Pvt. Ltd., (INDICON-18) on 15th December 2018 : Participated
14.	CB.EN.U4EEE17133	Pechetti Bhavana	Meta cognitive Neural Networks - some recent developments Tutorial, organized by INDICON-18, ASE, Coimbatore on 15th December 2018 : Participated
15.	CB.EN.U4EEE17136	Raja Varshini R	BOSCH prototyping IOT applications using XDK workshop, organized by Anokha-2018, ASE, Coimbatore from 22nd to 24th February 2018 : Participated
16.	CB.EN.U4EEE17143	M Shwetha	Arduino satellite workshop, organized by Kumaraguru College of Technology, Coimbatore on 6th February 2018 : Participated
17.	CB.EN.U4EEE17145	Sneha S	Arduino satellite workshop, organized by Kumaraguru College of Technology, Coimbatore on 6th February 2018 : Participated
18.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	BOSCH prototyping IOT applications using XDK workshop, organized by Anokha-2018, ASE, Coimbatore from 22nd to 24th February 2018 : Participated
19.	CB.EN.U4EEE17150	Surendrakumar Koganti	PCB Fabrication workshop organized by ASE, Coimbatore, on 15th December 2018 : Participated
20.	CB.EN.U4EEE17150	Surendrakumar Koganti	Meta cognitive Neural Networks - some recent developments Tutorial, organized by ASE, Coimbatore on 15th December 2018 : Participated
21.	CB.EN.U4EEE17151	Surya R	Electric Engine and Hybrid vehicles engineering workshop, organized by IISc, Bangalore from 19 to 20th January 2019 : Participated
22.	CB.EN.U4EEE17153	A Upashrutti	Machine Learning and Internet of Things using Matlab, organized by Anokha 2018, ASE, Coimbatore from 22nd to 24th February 2018 : Participated
23.	CB.EN.U4EEE17153	A Upashrutti	Cyber security workshop organized by NIT, Trichy on 4th March 2018: Participated
24.	CB.EN.U4EEE17153	A Upashrutti	NLP Foundation workshop training organized by onefluencer from 7th to 8th May 2016: Participated.
25.	CB.EN.U4EEE17153	A Upashrutti	Kickstart summit organised by the climber chennai from 3rd to 4th November 2018 : Participated
26.	CB.EN.U4EEE17155	Varsha V S	Arduino satellite workshop, organized by Kumaraguru College of Technology, Coimbatore on 6th February 2018 : Participated
27.	CB.EN.U4EEE17161	Yuvan Prajith R	Arduino satellite workshop, organized by Kumaraguru College of Technology, Coimbatore on 6th February 2018 : Participated
28.	CB.EN.U4EEE17159	Vijay Saieesh A T S	Presented a paper on Nanomaterials: Synthesis, Characterization and Applications at ICN International conference 2018, held at Mahatma Gandhi University, Kerala
29.	CB.EN.U4EEE17155	Varsha V S	Presented a paper on Nanomaterials: Synthesis, Characterization and Applications at ICN International conference 2018, held at Mahatma Gandhi University, Kerala
30.	CB.EN.U4EEE17135	Purnima G	Officers Training program organised by PSG IM on 22.7.18 : Participated
31.	CB.EN.U4EEE17135	Purnima G	Awarded as the best speaker by Chennai Articulators club, 15.6.18
32.	CB.EN.U4EEE17135	Purnima G	Awarded as the best table topic speaker by Chennai Articulators club, 15.6.18
33.	CB.EN.U4EEE17135	Purnima G	Secured special mention in NITMUN18, organised by NIT Calicut from 23.3.18 to 25.3.18
34.	CB.EN.U4EEE17135	Purnima G	SSNMUN, organised by SSN college of Engineering from 15.9.17 to 17.9.17: Participated
35.	CB.EN.U4EEE17135	Purnima G	MOPMUN, organised by MOP Vaishnav College for Women from 17.2.18 to 18.2.18 : Participated

36.	CB.EN.U4EEE17135	Purnima G	SNSMUN, organised by SNS college of Technology, from 23.2.18 to 25.2.18 : Participated
37.	CB.EN.U4EEE17135	Purnima G	IITM MUN, organised by IITM, Chennai from 5.1.18 to 7.1.18 : Participated
38.	CB.EN.U4EEE17120	Gopika S	Received Best Prepared Speaker, organized by Toast Masters International, 12.5.2018.
39.	CB.EN.U4EEE17120	Gopika S	Table topics speech contest organized by Toast Masters International, 4.2.2018 : 2 nd prize
40.	CB.EN.U4EEE17120	Gopika S	International speech contest organized by Toast Masters International, 4.2.2018 : 1 st prize
41.	CB.EN.U4EEE17120	Gopika S	Speech contest organized by Toast Masters International, 18.3.2018 : 1 st prize
42.	CB.EN.U4EEE17120	Gopika S	IITM MUN, organised by IITM, Chennai from 5.1.18 to 7.1.18: Participated
43.	CB.EN.U4EEE17120	Gopika S	MOPMUN, organised by MOP Vaishnav College for Women from 17.2.18 to 18.2.18 : Participated
44.	CB.EN.U4EEE17120	Gopika S	SNSMUN, organised by SNS college of Technology, from 23.2.18 to 25.2.18 : Participated
45.	CB.EN.U4EEE17120	Gopika S	Participated in SSNMUN, organised by SSN college of Engineering from 15.9.17 to 17.9.17 : Participated
46.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	200 m Free Style at Inter Campus Aquatic Championship, Coimbatore from 30.9.18 to 2.10.18 : 2 nd prize
47.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	50 m Breast Stroke at Inter Campus Tournament, Coimbatore from 30.9.18 to 2.10.18 : 3 rd prize
48.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	50 m Free Style at Inter Campus Tournament, Coimbatore from 30.9.18 to 2.10.18 : 3 rd prize
49.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	50 m Butter Fly at Inter Campus Tournament, Coimbatore from 30.9.18 to 2.10.18 : 3 rd prize
50.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	200 m Free Style at Inter Campus Tournament, Coimbatore from 30.9.18 to 2.10.18 : 3 rd prize
51.	CB.EN.U4EEE17146	Sree Sowndarya Cauvery J	800 m Free Style at Inter Campus Swimming Competition, ASE Coimbatore on 14.9.17 : 3 rd prize
52.	CB.EN.U4EEE17117	Dhipika A	Runner up in Volley Ball at Inter campus Tournament held at Mysuru, 7.1.18
53.	CB.EN.U4EEE17117	Dhipika A	Winner in Volley Ball at Inter campus Tournament held at Bangalore from 21.9.18 to 23.9.2018
54.	CB.EN.U4EEE17153	A Upashrutti	Received second runners up in REEV 18-19, SAE India, Bangalore on 7.2.19

Table 4.5.3d Participation in inter institute events by 2016-2020 batch

Sl.No.	Roll No.	Name	Achievements
1.	CB.EN.U4EEE16051	Sowrav S	Inter House Athletic meet , Amrita , 05/02/19 and REVELS athletic meet , Manipal Udupi , (06/03/19 - 08/03/19) Inter house athletic meet: Amrita, Shotput : 3rd prize Javelin : 2nd prize REVELS athletic meet: Manipal Udupi, Javelin : 3rd prize Overall runners
2.	CB.EN.U4EEE16069	Subash M	St.alouysious film festival, mangalore Sakthi college short film screening, Coimbatore : St.alouysious film festival,best short film Amritosavam,3rd place in short film

			Sakthi college first place,best short film
3.	CB.EN.U4EEE16041	Rakesh Choudhary	All India inter-University, Nation Cross country(10km) held in gulbarga University ,karnataka Participated: 1. Manipal University(Revels) held 6th to 9th March Participated in *5000m =2nd *1500m=2nd *800m=3rd And overall runner-up(2nd) in manipal Revels.
4.	CB.EN.U4EEE16040	Rajarathnam M S	Smart India Hackathon, Grand Finale, NIT Patna (March 2,3,4): Maipal Revels(Athletics), Maipal, Runner-Up, March 8
5.	CB.EN.U4EEE16068	Senthil Nathan V	Raspberry Pi for IoT - Event , IIT Madras: Second Place(Cash Prize), January 2018.
6.	CB.EN.U4EEE16124	Kisalaya Kurariya	AIU 2017 (group music western)-state level competition : Participated
7.	CB.EN.U4EEE16161	M R Viknesh	Death race Anokha 2018 : 2nd prize
8.	CB.EN.U4EEE16108	G Ramakrishna	Pick a robo event Anokha 2017 : 2nd prize Blastoise event Anokha 2018 : 1st prize
9.	CB.EN.U4EEE16135	N Sandeep	Pick a robo event Anokha 2017 : 2nd prize Blastoise event Anokha 2018 : 1st prize
10.	CB.EN.U4EEE16128	P J Madhusoothanan	Death race Anokha 2018 : 2nd prize
11.	CB.EN.U4EEE16132	Nikhil Yadav	Dance competition Thrissur : 5th place
12.	CB.EN.U4EEE16166	Vigneshwaran	Raspberry pi IOT Event, IIT Madras : 2nd prize
13.	CB.EN.U4EEE16116	Aniketh K	Pick and place, Anokha 2017 : 1st place INAVIGATE BITS,HYB - 3rd prize
14.	CB.EN.U4EEE16126	Nagasai	Pick and place, Anokha 2017 : 1st place INAVIGATE BITS,HYB : 3rd prize
15.	CB.EN.U4EEE16158	Sri Prasath V J	INAVIGATE BITS,HYB : 3rd prize
16.	CB.EN.U4EEE16159	Swaminathan	Death race Anokha 2018 : 2nd prize
17.	CB.EN.U4EEE16114	Jyothi Swaroop	KAIZEN Robotics ,IIT M : 1st prize Death race,Anokha 2018 : 4th place
18.	CB.EN.U4EEE16165	Venkatakrisna	Raspberry pi event,2018 : 2nd prize

Table 4.5.3e Participation in inter institute events by 2015-2019 batch

Sl. No.	Reg.No.	Name	Achievements
1.	CB.EN.U4EEE15010	Aswath G I	Innovator, Digital Impact Square, TCS Foundation

			Won the Intern with stipend pf 90,000/-
2.	CB.EN.U4EEE15010	Aswath G I	Intel Python Hack Fury, Hackerearth Technologies Pvt. Ltd: Second Prize
3.	CB.EN.U4EEE15010	Aswath G I	Project: Firmator Assistant, Pragyan 2018, NIT Trichy: Participated
4.	CB.EN.U4EEE15010	Aswath G I	Fly the Drone, Robotsavam 2017, IEEE and Amrita vishwa vidyapeetham, Kollam: Participated
5.	CB.EN.U4EEE15010	Aswath G I	LIFO, Race 17, Amrita school of engineering, Bengaluru: Participated
6.	CB.EN.U4EEE15010	Aswath G I	Embed Trix, Anokha 2017, ASE, Coimbatore: Second
7.	CB.EN.U4EEE15010	Aswath G I	Amrita Startup connect, TBI, ASE, Coimbatore: Participated
8.	CB.EN.U4EEE15010	Aswath G I	Picko Robo, Anokha 2017, ASE, Coimbatore: Third
9.	CB.EN.U4EEE15010	Aswath G I	Industrial IOT Hackathon, GE Digital: Participated
10.	CB.EN.U4EEE15010	Aswath G I	Open Challenge, Anokha 2018, ASE, Coimbatore: Participated
11.	CB.EN.U4EEE15010	Aswath G I	KAIZEN EXPO – SEASON 2, Lema Labs, IIT Madras Research Park: Runner up
12.	CB.EN.U4EEE15018	Garapathi Sri Maanvitha	Death race, Race 17, Amrita school of Engineering, Bengaluru: Participated
13.	CB.EN.U4EEE15018	Garapathi Sri Maanvitha	Death race, Anokha 2017, Amrita School of Engineering, Coimbatore: First
14.	CB.EN.U4EEE15018	Garapathi Sri Maanvitha	Robo soccer, Race 17, Amrita school of Engineering, Bengaluru: Participated
15.	CB.EN.U4EEE15018	Garapathi Sri Maanvitha	Robo race, Avantaa 2017, Sri Krishna College of Technology, Coimbatore: Participated
16.	CB.EN.U4EEE15049	S. R. Shiva	Hackathon, CRAFT 2k17, SCSVMV University & Calatropis Software solutions: Participated
17.	CB.EN.U4EEE15049	S. R. Shiva	Ware house monitoring drone using IOT, Lema Labs, IIT Madras Research Park: Participated
18.	CB.EN.U4EEE15015	Chervu Sowmya	Death race, Anokha 2017, ASE, Coimbatore: First
19.	CB.EN.U4EEE15015	Chervu Sowmya	Death race, Race 17, Amrita school of Engineering, Bengaluru: Participated
20.	CB.EN.U4EEE15015	Chervu Sowmya	Robo soccer, Race 17, Amrita school of Engineering, Bengaluru: Participated
21.	CB.EN.U4EEE15015	Chervu Sowmya	Spell Bee, Avantaa 2017, Sri Krishna College of Technology, Coimbatore: Second
22.	CB.EN.U4EEE15015	Chervu Sowmya	Robo race, Avantaa 2017, Sri Krishna College of Technology, Coimbatore: Participated
23.	CB.EN.U4EEE15055	Vaibhav Krishna	Expo department, Anokha 2019, ASE, Coimbatore: Head of organization team
24.	CB.EN.U4EEE15055	Vaibhav Krishna	Riphzha Automotive Aerodynamics, Anokha 2017, ASE, Coimbatore: First
25.	CB.EN.U4EEE15102	Aditya R	1. IoT BOOTCAMP by iBHubs, Challenge 2016 conducted by i3indya Technologies; Qualified to the National level, and proposed the idea for Smart Bins using IoT, as one of the top five teams on a national level : Participated 2.Successfully completed a Transporter Bot for e-Yantra Robotics Competition 2017
26.	CB.EN.U4EEE15106	Aparna Krishna	1.Circuit debugging conducted by Dept. of EEE, Amrita School of Engg. Coimbatore : 2015 – 3rd prize 2.Quizatron (Conducted by Dept. of EEE, Amrita School of Engg. Coimbatore) : 3rd prize 3.Science Quiz conducted by Dept. of EEE, (Amrita School of Engg.Coimbatore) : 2016 – 3rd prize. 4.ANVESHAN (Conducted by Dept. of EEE,Amrita School of Engg.Coimbatore) : 2nd prize winner of ANVESHAN IoT Fellowship conducted by Analog Devices Inc.,(For prototype development- 1 Lakh INR, Cash prize- 1.5 Lakh INR) 5.Niyantra(NI): Reached stage 2/3 of NIYANTRA, conducted by National Instruments. 6.Biomimcs, (Yugam,2016 -KCT's techfest) :1st prize in Biomimics (Yugam,2016 -KCT's techfest) 7.Electrohunt : 3rd prize in Electrohunt(GraVITas- VIT's Techfest). 8.Circuitronix : 1st prize in Circuitronix(GraVITas - VIT's Techfest). (Won a total cash prize of 15,000 INR in the above said events.)

			<p>9.2017 -Runner up in Volleyball (Intra Mural Competitions at Amrita Vishwa Vidyapeetham)</p> <p>10.Electrophilic : 1st prize in Electrophilic (Anokha - Amrita Vishwa Vidyapeetham's Techfest)</p> <p>11.BOSCH campus Ambassador for the academic year.</p> <p>12.2018 - Runner up in Volleyball (Intra Mural Competitions at Amrita Vishwa Vidyapeetham)</p> <p>13.Hackathon: Top 14 in TNGIC Hardware hackathon 2, conducted by Tamilnadu innovation grand challenge and FORGE</p>
27.	CB.EN.U4EEE15108	Athish T	<p>1.Hackathon : Top 14 in TNIGC Hackathon#2</p> <p>2.ANVESHAN : My team was one among the Top 14 selected to present their MUP pitch in front of a panel of investors and jury members, at TNIGC Hackathon#2 held at Forge Innovation Accelerator.</p> <p>3.Fellow of Anveshan 2016-17': First Runners Up of Anveshan IoT Fellowship 2016-17, conducted by Analog Devices Inc., with an initial prototyping grant of Rs. 1 Lakh Cash prize: Rs. 1,50,000.</p> <p>4.Descircuit :1st Runner up of 'Digit MakersHub Contest' Created a prototype on the idea 'Smart Air for Smart Cities' Cash prize: Rs.30,000 + Intel Developer's kit</p> <p>5.Electrophilic : Won a total cash prize of Rs. 25,500 at various tech-fests (Prizes in events 'Descircuit' and 'Cloud Frenzy' at Yugam'18; events 'Electrophilic' and 'Techathon' at Anokha'17; events 'Circuitronix' and 'Electrohunt' at GraVITas'16; event 'Biomimics' at Yugam-16)</p> <p>6.Niyantra(NI): NIyantra 2016 conducted by National Instruments- Qualified to Stage 2, with the idea 'CranSafe - A smart helmet', E-Yantra 2016 held by IIT Bombay</p>
28.	CB.EN.U4EEE15113	Deepak Aravind M	<p>1.Death Race : Winner of 'Death Race' (Bot-making event at Anokha 2k17, Amrita School of Engineering Cash Prize : Rs 12,000)</p> <p>2.ANVESHAN Fellow of 'Anveshan 2016-17' (First Runners Up of Anveshan IOT Fellowship 2016-17, conducted by Analog Devices Inc. with an initial prototyping grant of Rs.1 lakh Cash Prize : Rs.1,50,000.</p> <p>3.KPIT Sparkle : Participated</p> <p>4.Niyantra(NI) : Participated</p>
29.	CB.EN.U4EEE15114	Ganesh V.	<p>1.Death Race Won Second Prize in the "ANOKHA 2k17 National Level Techfest" conducted by "Amrita Vishwa Vidyapeetham, Coimbatore" on an event DEATH RACE. Where an Arduino powered Bluetooth controlled car was made.</p> <p>2.E-KART : Semi-finalist in a National Level event at "Amrita Vishwa Vidyapeetham, Bangalore" in association with IEEE</p>
30.	CB.EN.U4EEE15115	Gokullnath B	<p>1.Won the third prize in SMART VILLAGE contest – on Motor Pump Automation, at Anokha 2017.</p>
31.	CB.EN.U4EEE15116	Gowthaman B	<p>1.Blastoise : Won 3rd place in the event 'Blastoise' held at Anokha 2018 – Amrita's Technical Fest</p> <p>2.Electrohunt : Won 3rd place in the event 'Electrohunt' held at Anokha 2018 – Amrita's Technical Fest</p>
32.	CB.EN.U4EEE15118	Guru Vyaas	<p>1.Death Race : Secured 2nd place in "Death Race" at Anokha 2017 - Amrita Annual Tech fest.</p> <p>2.ROBO SOCCER : Finalist in "Robo soccer" IEEE's Annual event RASE-17 at Amrita School of Engineering,</p>
33.	CB.EN.U4EEE15119	Hareesh B	<p>1.Electrophilic : Won 2nd place in Electrophilic event at Anokha-2k17</p> <p>2.Circuit debugging & Designing : Won 3rd place in Circuit Debugging and Designing event organized by AEEE and the Dept. of EEE - 2018</p> <p>3.Participated in two day hackathon and presented a prototype for 'Intelligent traffic system' based on RFID organized by ibeyond technologies</p>
34.	CB.EN.U4EEE15121	Praneet K	<p>1.DEATH RACE : First place in DEATH RACE event in Anokha 2017</p> <p>2.ROBO SOCCER : Fourth place in ROBO SOCCER event conducted in RASE,17 in Amrita School of Engineering,Bangalore.</p>
35.	CB.EN.U4EEE15132	Manoj Kumar	<p>1.Death Race : Secured second place in DEATH RACE event in Anokha 2017.</p> <p>2.Runner up in intercampus tournament for Hand ball in 2017</p>

36.	CB.EN.U4EEE15135	Naveen P	1.Tezz : First place in technical event TEZZ conducted during ANOKHA-2017 2.Niyantara Technical Event : Emerged as PRE-FINALISTS of NIYANTRA Technical event conducted by National Instruments 3.ELECTROTRIX (NIT) : Second place in ELECTROTRIX event by AEEE
37.	CB.EN.U4EEE15136	Navin Kumar	1.Death Race : Secured 2nd place in DEATH RACE event in ANOKHA 2017
38.	CB.EN.U4EEE15139	Mahesh Kumar	1.KPIT Sparkle : Reached up to PRE-FINALIST Stage on Participated in KPIT SPARKLE 2018 Contest conducted bu KPIT Technologies.co. 2.Smart Village Contest Won third price in SMART Village Contest technical event conducted at ANOKHA 2017.
39.	CB.EN.U4EEE15140	Prathosh Raj	1.Electrophilic : Second Place in ELECTROPHILIC , a technical event during ANOKHA 2017
40.	CB.EN.U4EEE15143	Risheek S Kumar	1.Auto quiz : Metador
41.	CB.EN.U4EEE15147	Saravanan B	1.JAGRUTHI (on STEM CONCEPT) ALL INDIA STUDENT CONFERENCE :3rd prize in treasure hunt by IEEE advancing technology for humanity IES (Industry Electronics Society). 2.AYUDH certification (all India leadership training summit 2017, Kerala) nil 3.Presented paper in INTERNATIONAL CONFERENCE ON IEEE TECHNOLOGICAL INNOVATIONS IN ICT FOR AGRICULTURAL AND RURAL DEVELOPMENT
42.	CB.EN.U4EEE15150	A Sathyanarayanan	1.ELECTROTRIX (NIT) : 1st in TEZZ(Anokha-2017)
43.	CB.EN.U4EEE15152	Shankar S	1.Robo wars: 1st in Treasure hunt
44.	CB.EN.U4EEE15157	Suresh Ram R	1.Techno hunt :Runner up in Anveshan 2016 for the project "Smarter Air" and was awarded a prize money of ₹1.5 lakhs and a grant of 1 lakh 2.Machine Mastero : First place in 'Elektra' 3.Ambitrix : First place in 'Electrophilic' 4.Circuitron: First place in 'Elektra' 5.Race with lights : First Place in 'Biomimics' 6.Magneto : Second place in 'Cup-O-Code'

CRITERION 5	Faculty Information and Contributions	200
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Table B.5 Faculty information

S.No.	Name of the Faculty Member	Qualification			Association with the Institution	Designation	Date on which Designated as Professor/ Associate Professor	Date of Joining the Institution	Specialization	Academic Research			Currently Associated (Y/N) Date of Leaving (In case Currently Associated is ("No"))	Nature of Association (Regular/Contract)
		Degree (highest degree)	University	Year of attaining higher Qualification						Research Paper Publications	Ph.D. Guidance	Faculty Receiving Ph.D. during the Assessment Years		
1.	Dr. K. C. Sindhu Thampatty	Ph.D.	NIT, Calicut	2011	22 years 10 months	Associate Professor & Chairperson	01.08.11	13.06.96	Power System	58	3	-	Y	
2.	Dr. T. N. P. Nambiar	Ph.D.	IISC, Bengaluru		21 years 10 months	Professor	12.06.97	12.06.97	Power System			3	Y	Adjunct
3.	Dr. Rajeev Thottapillil	Ph.D.	University of Florida, Gainesville, USA	1992	2 year 4 months	Professor	01.12.16	01.12.16	Electro Magnetic Engineering				Y	Adjunct
4.	Dr. K. K. Sasi	Ph.D.	Jadavpur University	2000	14 years 10 months	Professor	05.06.04	05.06.04	Wind Energy	113	6	1	Y	
5.	Dr.T.B.Isha	Ph.D.	IIT Kharagpur	2002	11 years 3 months	Professor	02.01.08	02.01.08	Power Electronics & Drives	63	5	1	Y	

6.	Dr. P. Supriya	Ph.D.	Amrita Vishwa Vidyapeetham	2013	22 years 9 months	Associate professor and Vice Chairperson	01.07.13	02.07.96	Electronics & Control	35	2		Y	
7.	Dr.R. Jayabarathi	Ph.D.	Anna University, Chennai	2009	20 years 11 months	Associate Professor	01.07.11	06.05.98	Power System	7	1		Y	
8.	Dr.S. Balamurugan	Ph.D.	Anna University, Chennai	2010	10 years 10 months	Associate Professor	01.07.13	16.06.08	Power Systems	86	2	1	Y	
9.	Dr.M.R.Sindhu	Ph.D.	Amrita Vishwa Vidyapeetham	2012	17 years 10 months	Associate Professor	01.02.14	29.06.01	Power Quality	51	4		Y	
10.	Dr.A. Vijayakumari	Ph.D.	Anna University, Chennai	2014	17 years 10 months	Associate Professor	01.01.18	01.06.01	Applied Electronics	29	2		Y	
11.	Dr.V. Vanitha	Ph.D.	Anna University, Chennai	2012	12 years 9 months	Assistant Professor (SG)	01.07.13	14.07.06	Power Systems	39	5		Y	
12.	Dr.K.R.M. Vijaya Chandrakala	Ph.D.	Anna University, Chennai	2013	10 years	Assistant Professor (SG)	1.12.13	24.04.09	Electrical Power System	50	4		Y	
13.	Dr. Anju S Pillai	Ph.D.	Amrita Vishwa Vidyapeetham	2015	17 years 10 months	Assistant Professor (SG)	1.01.16	01.06.01	Electronics Design & Control	43	2		Y	

14.	Dr. T. Ananthan	Ph.D.	NIT Calicut	2015	4 years 11 months	Assistant Professor (SG)	01.08.15	05.05.14	Control Systems	7	2		Y	
15.	Dr. Venkata Ramana Murthy	Ph.D.	IIT Delhi	2012	3 years 3 months	Assistant Professor (SG)	29.01.16	29.01.16	Machine Learning	30	4		Y	
16.	Dr. S. Selva Kumar	Ph.D.	Anna University, Chennai	2017	10 years 10 months	Assistant Professor (SG)	01.01.18	16.06.08	Process Control & Instrumentation	19	1		Y	
17.	Dr. D. Kavitha	Ph.D.	Amrita Vishwa Vidyapeetham	2017	14 years 8 months	Assistant Professor (SG)	01.01.18	09.08.04	High Voltage Engineering	17	1		Y	
18.	Dr. Rahul sharma. K	Ph.D.	University of Pardubice Czech Republic	2017	9 months	Asst. Professor (SR)	05.07.18	05.07.18	Embedded System	19	1		Y	
19.	Ms.D.Prasanna Vadana	Ph.D.	Amrita Vishwa Vidyapeetham	2017	10 years 2 months	Asst. Professor (SR)	01.08.12	13.02.09	VLSI Design	4	-		Y	
20.	Mr.R.Shanmugha Sundaram	M.E.	Government College of Technology, Anna University	2005	13 years 9 months	Asst. Professor (SR)		01.07.05	Power Electronics & Drives	21	-		Y	
21.	Mr.S.R.Mohanrajan	M.E.	GOVERNMENT COLLEGE OF ENGINEERING, SALEM, ANNA UNIVERSITY	2006	12 years 9 months	Asst. Professor (SR)	01.01.11	12.07.06	Power Electronics & Renewable Energy	7	-		Y	

22.	Mr.S. Sampath Kumar	M.Tech.	National Institute of Technology, Trichy	2007	10 years 10 months	Asst. Professor (SR)	01.01.11	16.06.08	Power Systems	17	-		Y	
23.	Mr.N.Janarthanan	M.E.	ANNAMALAI UNIVERSITY	2008	10 years 10 months	Asst. Professor (SR)	01.07.11	16.06.08	Power Systems	17	-		Y	
24.	Ms.R.R.Lekshmi	Ph.D.	Amrita Vishwa Vidyapeetham	2018	10 years 9 months	Asst. Professor (SR)	01.07.11	07.07.08	Power System Engineering	10	-		Y	
25.	Mr.A.Suyampulingam	Ph.D.	Anna University, Chennai	2018	7 years 10 months	Asst. Professor (SR)		01.06.11	Applied Electronics	10	-		Y	
26.	Mr.N. Krishna Prakash	M.E.	Kumaraguru College of Technology, Coimbatore, Anna University	2004	7 years 8 months	Asst. Professor (SR)		01.08.11	Applied Electronics	24	-		Y	
27.	Ms. N. Aarthi	M.E.	PSG College of Technology, ANNA UNIVERSITY	2004	8 years 9 months	Asst. Professor (SR)	01.11.11	01.07.10	Power Systems	2	-		Y	
28.	Ms. P. Maya	M.Tech.	Amrita Vishwa vidya peetham	2007	9 years 8 months	Asst. Professor (SR)	01.08.12	01.08.09	Power Electronics	10	-		Y	
29.	Mr. P. Balakrishnan	M.E.	PSNA College of Engineering & Technology, ANNA UNIVERSITY.	2007	9 years 3 months	Asst. Professor (SR)	01.07.14	06.1.10	Power Electronics & Drives	10	-		Y	

30.	Mr. P. Sivraj	M.Tec h.	Amrita Vishwa Vidyapeetham	201 0	8 years 9 months	Asst. Professor (SR)	01.08.13	21.07.10	Embedde d System	3 1	-		Y	
31.	Ms. S. Parvathy	M.Tec h.	Amrita Vishwa Vidyapeetham	201 0	8 years 9 months	Asst. Professor (SR)	01.07.14	21.07.10	Power Electronic s	7	-		Y	
32.	Mr. N. Praveen Kumar	M.Tec h.	Amrita Vishwa Vidyapeetham	200 7	8 years 1 months	Asst. Professor (SR)	01.07.14	01.02.11	Power Electronic s	1 7	-		Y	
33.	Ms. R. Resmi	M.Tec h.	College of Engineering, Trivandrum, Kerala University	200 8	8 years 3 months	Asst. Professor (Sr.)	01.11.15	19.01.11	Navigatio n & Control	8	-		Y	
34.	Mr. K. Vijith	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 1	7 years 9 months	Asst. Professor (Sr.)	01.11.15	20.07.11	Power Electronic s	1 1	-		Y	
35.	Mr. T. Prabu	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 1	7 years 9 months	Asst. Professor (Sr.)	01.11.15	22.07.11	Power Electronic s	5	-		Y	
36.	Mr. Anu G Kumar	M.Tec h.	National Institute of Technology, Trichy	201 2	6 years 9 months	Asst. Professor (SR)	01.07.16	02.07.12	Power Systems	1 2	-		Y	
37.	Ms. N. Kirthika	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 2	6 years 9 months	Asst. Professor (SR)	01.01.18	18.07.12	Power Electronic s	7	-		Y	

38.	Ms. G. Saisuriyaa	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 3	6 years 1 months	Asst. Professor	01.08.13	07.03.13	VLSI Design	4	-		Y	
39.	Mr. M. Jayakumar	M. E.	SSN College of Engineering, Anna University	201 3	5 years 9 months	Asst. Professor	18.10.13	20.07.13	Power Electronic s & Drives	5	-		Y	
40.	Mr. S. Nithin	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 1	4 years 7 months	Asst. Professor	01.07.15	02.09.14	Embedde d System	6	-		Y	
41.	Mr. R. Ranjith	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 5	3 years 9 months	Asst. Professor	01.07.16	15.07.15	Embedde d System	6	-		Y	
42.	Mr. T. V. Sarath	M.Tec h.	AMRITA VISHWA VIDYAPEETHA M	201 4	3 years 3 months	Assistant Professor		07.01.16	Embedde d System	5	-		Y	
43.	Mr. B. Devanathan	M.Tec h.	Anna University	201 0	1 year 8 months	Faculty Associate		01.08.17	Industrial Engineeri ng	0	-		Y	Cont ract
44.	Ms Jisma, M.Tech.	M.Tec h	Govt. Engineering College, Thrissur, Calicut University	201 1	6 years 10 months	Asst. Professor (SR)	01.11.15	05.08.11	Power Systems	2	-		N 28/06/ 2018	

45.	Dr. Vivek Mohan	Ph.D.	Asian Institute of Technology, Bangkok, Thailand, AIT Bangkok	2016	10 months	Assistant Professor (SG)	01.08.16	01.08.16	Power Systems		-		N	30/06/2017
46.	Ms U Soumya	M.Tech	National Institute of Technology, Calicut, NIT Calicut	2013,	3 years 5 months	Assistant Professor	1.11.13	19.07.13	Power Electronics		-		N	30/12/2016
47.	Mr N Kathiravan	M.Tech	NIT Calicut	2011	5 years 3 months	Assistant Professor (SR)	20.06.11	20.06.11	Power Systems		-		N	30/09/2016
48.	Ms.V.Vidya	M.Tech	NIT CALICUT	2012	3 years 11 months	Assistant Professor	25.06.12	25.06.12	Power Electronics		-		N	31/05/2016
49.	Ms. SHANTHI C	MTECH	Kongu Engineering college, Anna university	2005	5 years 4 months	Assistant Professor (SR)	1.07.14	02.08.10	POWER ELECTRONICS		-		N	01/12/2015
50.	VENUGOPALAN K	MTECH			19 years 6 months	Assistant Professor (SG)	10.05.96		Applied Electronics		-		N	01/11/2015

5.1. Student-Faculty Ratio (SFR) (20)

(To be calculated at Department Level)

No. of UG Programs in the Department (n): 2

No. of PG Programs in the Department (m): 4

No. of Students in UG 2nd Year= **u1**

No. of Students in UG 3rd Year= **u2**

No. of Students in UG 4th Year= **u3**

No. of Students in PG 1st Year= **p1**

No. of Students in PG 2nd Year= **p2**

No. of Students = Sanctioned Intake + Actual admitted lateral entry students

(The above data to be provided considering all the UG and PG programs of the department)

S=Number of Students in the Department = UG1+UG2+UG3+PG1+PG2

F = Total Number of Faculty Members in the Department (excluding first year faculty)

Student Faculty Ratio (SFR) = S / F

Table B.5.1 Student Faculty Ratio

YEAR	CLASS	CAY 2018-2019	CAY m1 2017-2018	CAY m2 2016-2017
II year	U1.1	138	138	138
III year	U1.2	138	138	138
Final year	U1.3	138	138	138
	UG1	414	414	414
PE	P1.1	30	25	25
	P1.2	25	25	25
	PG1	55	50	50
EBS	P2.1	30	24	24
	P2.2	24	24	24
	PG2	54	48	48
RET	P3.1	0	18	18
	P3.2	18	18	18
	PG3	18	36	36
C&I	P4.1	0	18	18
	P4.2	18	18	0
	PG4	18	36	18
	Total No. of Students in the Department (S)	559	584	566
	No. of Faculty in the Department (F)	41	42	41
	Student Faculty Ration (SFR)	13.63	13.90	13.80
	Average SFR	13.78		

Marks to be given proportionally from a maximum of 20 to a minimum of 10 for average SFR between 15:1 to 25:1, and zero for average SFR higher than 25:1.

5.1.1. Provide the information about the regular and contractual faculty as per the format mentioned below:

Table 5.1.1 Regular/Contractual faculty details

Year	Total number of regular faculty in the department	Total number of contractual faculty in the department
CAY (2018-2019)	40	1
CAYm1 (2017-2018)	41	1
CAYm2 (2016-2017)	41	Nil

5.2. Faculty Cadre Proportion (20)

The reference Faculty cadre proportion is 1(F1):2(F2):6(F3)

F1: Number of Professors required = $1/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F2: Number of Associate Professors required = $2/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F3: Number of Assistant Professors required = $6/9 \times$ Number of Faculty required to comply with 20:1 Student-Faculty ratio based on no. of students (N) as per 5.1

Table B.5.2 Faculty cadre proportion

YEAR	Professors		Associate Professors		Assistant Professors	
	Required	Available	Required	Available	Required	Available
CAY (2018-2019)	4	2	7	6	19	33
CAYm1 (2017-2018)	4	2	7	5	20	35
CAY m2 (2016-2017)	4	2	7	5	20	34
Average Numbers	4	2	7	5.33	19.67	34

Cadre Ratio marks = 16.49

5.3. Faculty Qualification (20)

FQ = $2.0 \times [(10X + 4Y)/F]$ where x is no. of regular faculty with Ph.D., Y is no. of regular faculty with M.Tech., F is no. of regular faculty required to comply 20:1 Faculty Student ratio (no. of faculty and no. of students required are to be calculated as per 5.1)

Table B.5.3 Faculty Qualification

YEAR	X	Y	F	FQ = $2.0 \times [(10X + 4Y)/F]$
CAY (2018-2019)	18	22	28	19.14
CAY m1 (2017-2018)	16	25	30	17.33
CAY m2 (2016-2017)	14	27	29	17.10
Average Assessment				17.86

5.4. Faculty Retention (10)

No. of regular faculty members in CAYm2 = 41 CAYm1 = 42 CAY = 41

Table B.5.4 Faculty retention

Details	CAY (2018-2019)	CAY m1 (2017-2018)	CAY m2 (2016-2017)
Total number of faculty	41	42	41
Number of faculty retained for 3 years	37	36	35
Faculty retention ratio	90.24	85.71	85.37
Average	87.11		

(% of faculty retained during the period of assessment keeping CAYm3 as base year)

5.5 Faculty Competencies in correlation to Program Specific Criteria (10)

Table 5.5 Faculty competencies

Name of the Faculty	Power Systems	Power Electronics and Drives	Renewable Energy	Control Systems	Embedded Systems
Dr. K C Sindhu Thampatty	√	√			
Dr. P Supriya					√
Dr. K K Sasi			√		
Dr. T B Isha		√			
Dr. R Jayabarathi	√				
Dr. S Balamurugan	√			√	
Dr. M. R. Sindhu		√			
Dr. A Vijayakumari		√			
Dr. V Vanitha			√		
Dr. K R M Vijaya Chandrakala	√			√	
Dr. Anju S Pillai					√
Dr. T Ananthan				√	
Dr. Venkata Ramana Muthy O				√	
Dr. S Selva Kumar	√			√	
Dr. D Kavitha	√				
Dr. Rahul Sharma				√	
Mr. R Shanmugha Sundaram					√
Mr. S R Mohanrajan		√			
Mr. S. Sampath Kumar	√	√			
Mr. N Janarthan	√				
Ms. R R Lekshmi	√				
Mr. A Suyampulingam			√		
Mr. N Krishna Prakash					√
Ms. Aarthi N	√		√		
Dr. Prasanna Vadana			√		√
Ms. P Maya		√			
Mr. P Balakrishnan		√			

Mr. P Sivraj					√
Ms. S Parvathy		√			
Mr. N. Praveen Kumar		√			
Ms. R Resmi			√		
Mr. K Vijith		√			
Mr. T Prabu		√	√		
Ms. M Jisma	√				
Mr. Anu G Kumar	√				
Ms. N Kirthika		√			
Ms. G Saisuriyaa					√
Mr. M Jayakumar		√			
Mr. S Nithin					√
Mr. R Ranjith					√
Mr. T V Sarath					√

5.6 Innovation by the Faculty in Teaching

Innovation: 1

Subject : Power Systems Lab

Title : Laboratory Model Based Teaching of Power System

Teaching and learning of various streams of Electrical Engineering is now relatively easy due to the developments in simulation tools. The advancements in the digital computer techniques made it possible. Power systems, electromagnetic theory, circuit theory and basic electronics can be taught using simulation tools. Most of the engineering colleges are equipped with modern computers and simulation software to teach power systems with reasonable accuracy. The students fail to feel the physical behavior of the system, when they learn with simulation software. The accuracy of the models used in the simulation software is based on their representations as equations and parameters. Besides, there are various non linearities that are difficult or time consuming to represent on a computer. Hence the simulation studies must be supplemented by laboratory studies. Otherwise the students will miss the limitations of physical components.

An experimental system frequently shows up results that are not expected in a linearised equation based model. This explains the continued interest in laboratory models of power system using micro machines. Teaching of power systems through laboratory courses is not available in several colleges. The modern developments in power system such as effect of Flexible AC Transmission Systems, Ferranti effect, Voltage profile in a transmission network, series and shunt compensation, operation and control of actual power system are not demonstrated to under graduate students through laboratory experiments. To give physical sense, practical exposure, retained understanding and real time contributions to the power system, the undergraduate students in the electrical and electronics department of Amrita School of Engineering, Coimbatore are taught using laboratory model to understand the different aspects of power system. This practice is followed for the past five years with the available facilities. The cost involved in the development of laboratory model is very less when compared to the simulation tools costs.

Description of the current practice of innovation

In the Electrical and Electronics Engineering department of Amrita School of Engineering, Coimbatore, the power system concepts are taught through practical laboratory model. Power system is comprised of generation, transmission, distribution and loads. The Three phase alternator, grid and loads are available in the electrical machines lab. The major requirement is the transmission line as a scaled down model.

The line parameters of 220 kV, 100MVA, 150 km ACSR conductor are scaled down to 5kVA, 400V. The scaled down model is fabricated with R, L and C as distributed parameters. The required value of R can be obtained using rheostat. Capacitors of different values are available in the market at less cost. The required of L is developed in our laboratory by choosing proper core, length of the conductor, area of cross section of the

conductor, number of turns and air gap length. The core is made of E and I to provide variable air gap which in turn gives flexibility to change the L value and also avoid the core to get into saturation.

Using the developed transmission line, generator, grid(3 phase 415V), autotransformer, transformers and loads, the following concepts of power systems are taught in the power system lab using different laboratory models.

- Surge Impedance loading and voltage profile along line.
- Ferranti effect on lightly loaded/open circuited transmission lines.
- Load flow through transmission line and Control of power flow through transmission line.
- Effect of series and shunt compensators on power flow.
- Demonstration of instability and power oscillation by swinging generators by simulating faults or switching off transmission lines.
- Reactive power control of generators and through lines by excitation control and by compensator deployment.(through generator excitation and compensator deployment)
- Damping oscillations of machine connected to infinite bus through automatic voltage regulator.
- Power setting in different generators for real power flow control
- Effect of parallel transmission lines on power flow and voltage.
- Principle of phase angle regulator to control power flow.
- Restorative procedure to transit the system from island to normal state
- Characteristics of different types of buses
- Energy and Frequency Management in power system.

Innovation : 2

Subject : 15EEE335. Design of Electrical Systems

Teaching Approach:

In industry, electric system design is done using ETAP. Thus for the elective subject: 15EEE335. Design of Electrical Systems developed the Electrical System of Amrita campus in ETAP. Using ETAP12, Introduced to students how system design is done using ETAP and discussed in class the various design aspects.

Innovation : 3

Subject : EEE341/15EEE313 Power Electronics:

The topics covered (Various Power Electronic Converters) in the lecture hours will be given as an simulation assignment to the students roll number wise as the topic progresses. The student has to simulate the circuit and analyze the characteristics across each component used in the power circuit. Students have to submit the analysis report(Hard copy), send the simulated file(Soft copy) and last 10 minutes of lecture hour will be allotted to the students for presenting the analysis as a seminar.

In this way, once a topic is covered the students will be able to understand clearly when it is presented as a simulation. This procedure will be evaluated as an assignment component.

Innovation : 4

Subject : 15EEE201 Analog Electronic Circuits

An innovative practice of "teaching through simulation" is carried out when the subject 15EEE201 Analog Electronic Circuits was taught during the third semester for the 2017-2021 batch of undergraduate students. As this subject involves a number of electronic circuits, MultiSim simulation tool is used to explain the operation of circuits such as clippers, clampers, BJTs etc wherever necessary during the regular lecture sessions. Also, small circuits like clippers, clampers and transistor as switch etc. are implemented hands-on in the class for detailed explanations. This removed the conventional way of drawing the circuit on the board and explaining it which the student has to visualize. A multiple choice question based online Quizzes (in AUMS) are conducted for every major topic to test the conceptual understanding of the student. Updating the course plan, lecture slides, answer keys for the periodicals, tutorials, quizzes and assignments on the www.eeeforum.weebly.com webpage also provided an active learning environment for the student. For every laboratory session, the student will be designing the circuit and verify the circuit using simulation. This is followed by pre-lab quiz (online) to test the prior knowledge of the experiment. Then the experiment is practiced in hardware which is followed by post-lab quiz (online) to test the understanding and learning out of the experiment.

5.7 Faculty as participants in Faculty development /training activities/STTP (15)

Table B.5.7 Faculty participation in FDP/training/STTP

Name of the Faculty	Max. 5 per Faculty		
	CAYm3(2015-16)	CAYm2(2016-17)	CAYm1(2017-18)
Dr. K C Sindhu Thampatty	5	3	3
Dr. P Supriya	5	5	5
Dr. K K Sasi	3	3	
Dr. T B Isha	3	3	
Dr. R Jayabarathi	3	5	
Dr. S Balamurugan	3	5	5
Dr. M. R. Sindhu	3	5	
Dr. A Vijayakumari	3	5	3
Dr. V Vanitha	3	3	3
Dr. K R M Vijaya Chandrakala	3	5	5
Dr. Anju S Pillai	3	3	3
Dr. T Ananthan	5	3	
Dr. Venkata Ramana Muthy O		5	3
Dr. S Selva Kumar	5	5	5
Dr. D Kavitha	3	5	
Dr. Rahul Sharma		3	
Mr. R Shanmugha Sundaram	5	5	
Mr. S R Mohanrajan	3	3	5
Mr. S. Sampath Kumar	5	5	5
Mr. N Janarthan	5	5	5
Ms. R R Lekshmi	5	5	5
Mr. A Suyampulingam	3	3	
Mr. N Krishna Prakash	5	5	
Ms. Aarthi N	5	5	5
Dr. Prasanna Vadana	3	5	3
Ms. P Maya	3	3	
Mr. P Balakrishnan	3	5	
Mr. P Sivraj	5	3	5
Ms. S Parvathy	5	3	5
Mr. N. Praveen Kumar	5	5	
Ms. R Resmi	5	3	3
Mr. K Vijith	5	3	3
Mr. T Prabu	5	3	5
Ms. M Jisma	3	3	
Mr. Anu G Kumar		5	5
Ms. N Kirthika	5	5	3
Ms. G Saisuriyaa	3	3	
Mr. M Jayakumar		3	5
Mr. S Nithin	3	3	
Mr. R Ranjith	5	3	3
Mr. T V Sarath		5	3
SUM	144	165	103
RF = No. of Faculty required to comply with 20:1 Student – Faculty ratio as per 5.1	27	29	30
Assessment = 3 X (Sum/0.5 RF)(Marks limited to 15)	32.00	34.14	20.60
Average assessment over last three years (Marks limited to 15)			28.91

5.8. Research and Development (75)

5.8.1. Academic Research (20)

Table 5.8.1a Faculty Receiving PhD during the assessment period

S No	Name	Thesis Title	University	Month & Year
1	Dr. A. Vijayakumari	A novel maximum power point tracking of photovoltaic array and online dynamically decoupled control of microgrid connected inverter	Anna University	Nov-14
2	Dr. Anju S Pillai,	A Software Approach To Energy Minimization in Embedded Processors Under Real-time Constraints	Amrita Vishwa Vidyapeetham	Dec-15
3	Dr. T . Ananthan.	Novel FPGA based Parallel Architecture for on -line system identification and Control	NIT Calicut	Dec-15
4	Dr. S. Selva Kumar,	Development of optimal Controller for parallel operation and Inter connected operation of heavy duty gas turbine plants	Anna University	Dec-16
5	Dr. D. Kavitha,	Theoretical and Experimental Investigations on Dielectric Properties of EPOXY and XLPE Nanocomposites	Amrita Vishwa Vidyapeetham	Dec-16
6	Dr. D. Prasanna Vadana	Development and Laboratory Scale Testing of Dynamic Energy Management System for Smart Microgrids	Amrita Vishwa Vidyapeetham	Dec-17
7	Dr. R R Lekshmi	GENCO and TRANSCO Reserve Based Control Strategy for Load Frequency Control in Deregulated Power System	Amrita Vishwa Vidyapeetham	Aug-18

Table 5.8.1b Ph.D Guidance

S.No	Name & Register Number	Research Status	Thesis Advisor	Date of Registration
1	Mahalakshmi (BL.EN.D*EEE13001)	Completed Open Seminar 1	Dr. K. C. Sindhu Thampatty	1 ST August, 2013
2	Aarthi N (CB.EN.D*EEE14004)	Completed Comprehensive viva	Dr. K. C. Sindhu Thampatty	31st July 2014
3	Parvathy S (CB.EN.D*EEE14003)	Completed Open Seminar 1	Dr. K. C. Sindhu Thampatty	8th April 2014
4	Krishna Kumari K (CB.EN.D*EEE16007)	Completed Comprehensive viva	Dr. K. C. Sindhu Thampatty	1st January 2017
5	S R Mohanrajan (CB.EN.D*EEE08002)	Completed Open seminar-1	Dr. K.K.Sasi	Decmber 2008
6	Sivraj P (CB.EN.D*EEE11002)	Completed Open seminar-1	Dr. K.K.Sasi	1st April 2012
7	Nithin S (CB.EN.D*EEE11003)	Completed Open seminar-1	Dr. K.K.Sasi	16th July 2012
8	Prabu T (CB.EN.D*EEE14002)	Completed Comprehensive viva	Dr. K.K.Sasi	15th july 2014
9	Vijith K (CB.EN.D*EEE15007)	Doing course work	Dr. K.K.Sasi	14th December 2015
10	Sarath.T.V. (CB.EN.D*EEE17010-PT)	Completed Comprehensive viva	Dr. K.K.Sasi	1st August 2017
11	Praveen Kumar N (CB.EN.D*EEE12003)	Completed Open seminar-1	Dr .T.B.Isha	14th June 2013
12	Balakrishnan P (CB.EN.D* EEE12002)	Completed Qualifying Examination	Dr .T.B.Isha	14th Jun-13
13	Sadeep S (CB.EN.D*EEE16005)	Completed Qualifying Exam	Dr .T.B.Isha	27th July 2016
14	Sivasubramanian N (CB.EN.D*EEE16002)	Doing course work	Dr .T.B.Isha	25th July 2016
15	Vaisakh T (CB.EN.D*EEE17003-PT)	Completed comprehensive viva	Dr .T.B.Isha	14th July 2017
16	Shanmugha Sundaram R (CB.EN.D*EEE13002)	Completed Open seminar-1	Dr.P.Supriya	2nd January 2014
17	S B Jasna (CB.EN.D*EEE13003)	Completed Open seminar-1	Dr. P. Supriya	20th January 2014
18	Neenu Thomas (CB.EN.D*EEE15004)	Completed Comprehensive viva-voce	Dr. R. Jayabarathi	7th July 2015
19	N. Janarthanan (CB. EN.D*EEE12001)	Completed Open seminar-1	Dr. S.Balamurugan	12th December 2012
20	Sidharthan P.B.	Doing course work	Dr.S.Balamurugan	18th July 2018
21	Kirthika N (CB.EN.D*EEE14001)	Completed Comprehensive viva-voce	Dr. K.I.Ramachandran	15th July 2014
22	Sindhu S (CB.EN.D*EEE12004)	Completed Open seminar-1	Dr. M.R. Sindhu	28th June 2013
23	Ginnes K John (CB.EN.D*EEE15001)	Completed Comprehensive viva-voce	Dr. M.R. Sindhu	10th July 2015
24	Jithin K Jose (CB.EN.D*EEE16003)	Completed Comprehensive viva-voce	Dr. M.R. Sindhu	27th July 2016
25	Anu.G.Kumar (CB.EN.D*EEE17002-PT)	Completed course work	Dr. M.R. Sindhu	20th July 2017

26	Bhadra R Warriar (CB.EN.D*EEE15006)	Completed Open seminar-1	Dr. A. Vijayakumari	15th November 2015
27	Ikkurti Sai Chaitmya (CB.EN.D*EEE18001-FT)	Doing course work	Dr. A.Vijayakumari	18th July 2018
28	Resmi R (CB.EN.D*EEE12005)	Completed Open seminar-1	Dr V. Vanitha	Jul-13
29	M Jayakumar (CB.EN.D*EEE14007)	Completed comprehensive viva-voce	Dr V. Vanitha	22nd December 2014
30	Anisha Asmy.N.R (CB.EN.D*EEE16006)	Doing course work	Dr V. Vanitha	27th July 2016
31	Aseem K (CB.EN.D*EEE16009)	Completed comprehensive viva-voce	Dr V. Vanitha	1st February 2017
32	Devanathan B. (CB.EN.D*EEE18003-PT)	Doing course work	Dr V. Vanitha	26th July 2018
33	Kiran P (CB.EN.D*EEE15002)	Completed Comprehensive viva-voce	Dr. K.R.M. Vijaya Chandrakala	13th July 2015
34	Peer Mohamed A (CB.EN.D*EEE17001-FT)	Completed Comprehensive viva-voce	Dr. K.R.M. Vijaya Chandrakala	24th July 2017
35	Sruthy K Das (CB.EN.D*EEE17004 -FT)	Completed course work	Dr Asha Sathish	17th July 2017
36	M.Shyama (CB.EN.D*EEE13101)	Completed Comprehensive viva-voce	Dr. Anju S. Pillai	16th January 2014
37	R.Ranjith (CB.EN.D*EEE16001)	Completed Comprehensive viva-voce	Dr. Anju S. Pillai	29th July 2017
38	Suchithra.K.S (CB.EN.D*EEE16008)	Completed course work	Dr. E.A. Goplakrishnan	27th July 2016
39	Adhul S V (CB.EN.D*EEE17006-FT)	Completed Comprehensive viva-voce	Dr T Ananthan	24th July 2017
40	Sini S (CB.EN.D*EEE17007-FT)	Completed Comprehensive viva-voce	Dr T Ananthan	24th July 2017
41	Anoop S (CB.EN.D*EEE17008-FT)	Completed Comprehensive viva-voce	Dr. O V Ramana Murthy	24th July 2017
42	Manikandan P (CB.EN.D*EEE17009-FT)	Completed course work	Dr. O V Ramana Murthy	17th July 2017
43	Devika K. (CB.EN.D*EEE18004-FT)	Doing course work	Dr. O V Ramana Murthy	24th July 2017
44	Radhika K. (CB.EN.D*EEE18005-FT)	Doing course work	Dr. O V Ramana Murthy	24th July 2017
45	Harsha Gopinath (CB.EN.D*EEE17005-FT)	Completed course work	Dr. Rahul Sharma K	25th July 2017

Table 5.8.1c Research Paper Publication

	2015	2016	2017	2018
Number of Journal Publication	44	31	3	12
Number of Conference Publication	10	41	53	77
Citations	87	162	33	5



5.8.2. Sponsored Research (20)






Table 5.8.2 Sponsored research details


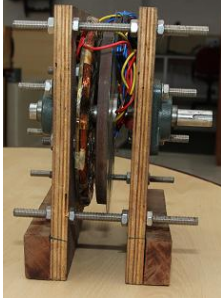
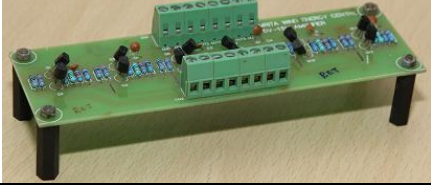



S. No	Principal Investigator	Title	Agency	Amount
1	Dr. K.K. Sasi	Development and prototyping of ICT enabled smart charging network components	DHI	71.0 Lakhs
2	Dr.K.K. Sasi	A modular Cyber Physical Systems for Sustainable Water Management	DST-ICPS	40 Lakhs
3	Dr. M.R. Sindhu	An intelligent Controller Based Shunt Hybrid Filter for Harmonic Reduction in Adjustable Speed Drives	DST	17.4 Lakhs

5.8.3. Development activities (15)

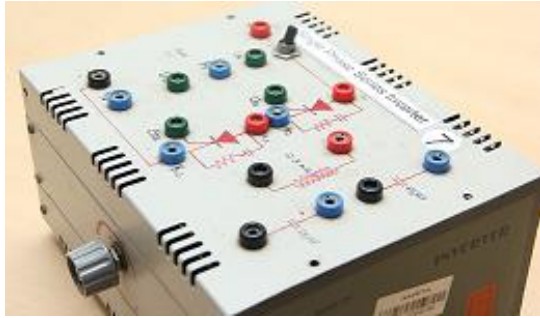
Table 5.8.3 Products developed by the EEE department

Product	Description
	<p>Shunt Reactor: Three phase variable shunt reactor with provision to change tap setting and air gap. 415V, 15 A.</p>
	<p>Injection Transformer: 1kVA, 415/415V injection transformer with tap setting is available – 3 Nos.</p>

	<p>Resistive Load: 230V, 3000W resistive load has been developed. Proper cooling and Fuse protection is provided- 3 Nos.</p>
	<p>Synchroscope: Synchronization panel is developed based on synchroscope. It has the provision to confirm the phase sequence. Voltage can be measured using digital meter.</p>
	<p>Transmission Line Model: Scaled down model of transmission line is developed. It is scaled down from 220kV, 100MVA down to 400V, 5kVA of 150km. - 13 Nos.</p>
	<p>Capacitor Banks: Capacitor banks replicating the shunt capacitance of scaled down version transmission line. Different capacitor value bank is also developed to perform shunt compensation.</p>
	<p>IEEE 5 Bus System: Scaled down model of IEEE 5 bus system from 100kV, 100 MVA down to 400V, 3kVA is available with data acquisition system.</p>

	<p>Lamp load which can be connected in star/delta configuration. The lamp load can be used as three phase load as well as single phase load.</p>
	<p>Permanent Magnet Axial Flux Generator. Prototype of PMAFG rated at 100 W was designed and fabricated. It has application in small wind turbines where the turbine blade can be directly fixed on to its shaft.</p>
	<p>5 V to 15V driver circuit for IGBT, especially for Semikron inverters.</p>
	<p>Frequency to voltage converter- it is helpful in implementing PID controller for speed control/ frequency control of Induction machine.</p>
	<p>Real Time Data Collection Unit(RTDCU) mimics the functionality of a Phasor Measurement Unit(PMU). The RTDCU units are time synchronized and can measure Voltage phasor, current Phasor and frequency in distribution side. The measured phasors can be communicated via wired/wireless communication technologies.</p>
	<p>IRAMS06UP60B is an Integrated Power Module which offers an extremely compact, high performance AC motor-driver in a single isolated package for a very simple design. The circuitry needed for IRAM was designed and developed.</p>

	<p>The 5 bus smart microgrid simulator (SMGS) equipped with Real time data collection units could be used for smart grid research. The SMGS represents a microgrid covering an area of approximately 25km². Conventional and non conventional sources could be interfaced to SMGS and various management strategies could be studied.</p>
	<p>MOSFET Driver circuit This is a signal conditioning unit for driving Power MOSFETs, and has voltage amplification, opto isolation and bipolar output with <i>npn-pnp</i> totem-pole circuit for rapid <i>turn-on</i> and <i>turn-off</i>. Specifications: Power supply specifications: Input DC for amplification is 9V/1A, Opot-isolator IC 6N137</p>
	<p>Multiple output Power supply units It has three output voltage levels out of which one is a dual power supply with $\pm 15V$ required for Op-Amp circuits; the other is a single power supply with +5V specification Specifications: Input Transformer = 18-0-18V / 1.5A Output = $\pm 15V$, 1A, +5V, 1.5A</p>
	<p>Isolated Current Transducer with level shifter and CT without level shifter 1. CT with level shifter: Hall effect galvanically isolated current transducers with a measurement capability of up to 25A. It has the following current options $I_{PN} = 5-6-8-12-25$ A Specifications: Make : LEM Current transducer = LA25-NP Power Supply = ± 5 V</p>
	<p>PT with level shifter and PT without level shifter Hall effect galvanically isolated potential transducers with a measurement capability of up to 500V, with the primary current restricted to 10 mA. Specifications: Voltage transducer = LV 20-P Make : LEM $I_{PN} = 10$ mA $V_{PN} = 10$ to 500 V</p>



Single Phase Series Inverter:

Converts dc input to sinusoidal ac using thyristor devices based on load commutation. Output power variations are obtained through output frequency variations. Load current, capacitor voltage, source current and thyristor voltages are measurable in the circuit.

Specifications:

Maximum Power rating = 50 W and operate with input dc of 24 V, 2 A. Output frequency can be varied upto 1 kHz.

SCR - TYN616 (600V, 16A) provided with Heat sink and RC snubbers.

SCR gating signals are isolated through pulse transformer

The converter circuit is provided with short circuit protection against dead-time.



Single Phase Bridge Inverter:

Converts dc input voltage to square wave ac output with 100 Hz frequency. Blanking time is provided against short circuit. Measurement points are provided for Load voltage, load current, source current, device voltage and gating signals.

Specifications:

Maximum Power output – 60 W

MOSFET – IRFP460N ($V_{ds} = 500V, I_d = 20A$)

MOSFET with heat sink and RC snubbers

Provided with over current protection for each leg and at ac input for over load.

Opto-isolated MOSFET gate drivers with voltage amplification.



Variable dc power supply using Single Phase Full Bridge Converter:

AC to Variable dc output with thyristor based full bridge converter. Two quadrant operation. The triggering angles of the thyristors are varied through a potentiometer provided. Synchronized gating signals are generated using the zero crossing information. A low pass LC filter is provided at the output, in order to maintain a ripple free dc output voltage and current. Load voltage, current, bridge output voltage and source current are measurable.

Specifications:

Maximum power output: 60 W

SCR - TYN616 (600V, 16A) with Heat sink and RC snubbers

Input Transformer : 230/30V,60VA

SCR gating signals are isolated from each other using pulse transformer

Over current protection is provided at the ac Input, leg 1, leg 2, load and also for the control circuit.



Speed Control of DC Motor Using Chopper Driver:

A semi-closed loop control circuitry for operating a Step down dc-dc converter with an over current protection provided through a current sensing circuit. Soft start features for inrush currents. Designed to operate in both CCM and DCM. All the control circuit quantities are measurable besides the armature voltage, current and dc input current.

Specifications:

MOSFET – IRFP460N ($V_{ds} = 500V, I_d = 20A$)

MOSFET with heat sink and RC snubber.

Over current Protection at the Input and in the control circuit.



Multi Level Inverter:

Two independent dc source cascaded Multi-level inverter using two single phase IGBT H-bridges for three level output voltage.

Output Power – 60 W. Individual H-bridge output voltage and the cascaded output voltage and source currents are measurable. Phase displacement control is adapted for generation of gating signals for the individual H-bridges. The gating signals are generated using Arduino micro-controller.

Specifications:

IGBT = G60N100 ($V_{CE} = 1000V, I_C = 60A$)

IGBT with heat sink and RC snubber

Input = 2x12V, 2A

IGBT isolated using Driver circuit

Over current Protection at the input of H-Bridge 1 & 2, load 1 & 2.



Three Phase Inverter:

Three leg inverter with protection and drives inbuilt in the experimental kit and can be directly driven by control signals generated from microcontrollers. It works satisfactorily up to a switching frequency of 50 kHz. Pole voltages, source current, line currents, device voltages and all gating voltages are measurable.

Specifications:

Power Rating – 2 kVA

IGBT = G60N100 ($V_{CE} = 1000V, I_C = 60A$)

IGBT with heat sink and RC snubber

Individual IGBTs provided with Opto- isolated gate Driver circuits

Over current Protection provided at the dc side and in each leg



Single Phase Half Controlled Bridge Converter:

AC to Variable dc output with thyristor based semi converter bridge. One quadrant operation. The triggering angles of the thyristors are varied through a potentiometer provided. Synchronized gating signals are generated using the zero crossing information. Load voltage, current, freewheeling diode current, individual device currents, device voltage and source current are measurable.



Specification:

Output Power = 50 W

SCR - TYN616 (600V, 16A) with Heat sink and RC snubber

Input is fed through 230/30V,60VA Transformer .

SCR gating signals are isolated using pulse

	<p>transformer Over current protection is provided at the ac Input, each leg, load, and in the control circuit.</p>
	<p>Single Phase AC Phase Control Using SCR: Fixed AC to Variable AC output conversion with thyristor based ac regulator. The triggering angles of the thyristors are varied through a potentiometer provided. Load voltage, current, individual device voltages, and source current are measurable. The potentiometer is designed to obtain operation below load phase angle. The half wave operation can be seen. Multiple gating pulses for each thyristor for guaranteed turn on with RL loads. Analog UJT oscillator circuit is used to generate synchronized gating signals. Specification: Output power – 50 W. SCR - TYN616 (600V, 16A) with Heat sink and RC snubber. Input to bridge is fed through 230/30V,60VA Transformer. SCR gating signals are isolated from each other using pulse transformer Over current protection is provided at the Input and in the control circuit.</p>
	<p>Isolation Transformer: This is used to facilitate flexible measurements at all possible nodes in various power converter circuits by providing isolation between the measuring devices like Digital Storage Oscilloscope. Specification: 230V/230V, 500 VA</p>

Research Laboratories

1. Embedded Systems Laboratory
2. Renewable Energy Laboratory
3. Drives and Control Lab
4. Power Systems Lab
5. Power Electronics Lab

5.8.4. Consultancy (from Industry) (20)

On Non profitable basis, consultancy work has been carried out with Roots, Indian Navy, ANERT, Pricol, ELGi, BOSCH, CISCO, Ahalia Alternate Energy Wind mill, KSEB, Siva Consultant, Kottaikal Arya Vaidya, etc.

5.9. Faculty Performance Appraisal and Development System (FPADS) (10)

Faculty appraisal is done at the end of each academic year. Evaluation is done in five major areas as follows

1. TEACHING-EVALUATION ACTIVITIES

In this area, the faculty's foremost duty on teaching courses, conducting labs, guiding bachelors, masters and doctoral Thesis is evaluated. Due importance is also given to responsibilities such as lab in- charge, Thesis evaluation committee and so-kind

2. RESEARCH and CONSULTANCY ACTIVITIES

In this area, the faculty's research aptitude is evaluated. The criteria are publication including conference, journal and books/chapter, citations of his/her publications, patents, research proposals submitted and/or undertaken, consultancy, organizing/chairing workshops and conferences. Due weightage is also given to the impact factor of the journals and the number of co-author Amrita faculty contributing to the publication.

3. AWARDS and RECOGNITIONS

This area is based on the laurels the faculty has brought for the institute by making significant contribution in sports, cultural, technical, research, societal events held in national or International level. Equal weightage is given if the faculty has mentored student(s) to achieve the same achievement. Direct and indirect contributions are equally appreciated.

4. DEPARTMENTAL ACTIVITIES

This area is for evaluating the faculty's administrative duties undertaken at department level. The duties include class adviser/counsellor, course mentoring, coordinator for UG and PG admissions, industrial training and placement, Board of Studies member for designing UG, PG courses curriculum and so-kind

5. CAMPUS/UNIV ADMINISTRATIVE ACTIVITIES

This area is for evaluating the faculty's administrative duties undertaken at University level, coordinating with other departments and groups. The duties include conducting examinations, organizing annual cultural, technical and sports events and festivals, NAAQ, NBA, AICTE review coordination, student affairs (e.g. hostel) related roles.

Refer Annexure B. 5 – I

5.10. Visiting / Adjunct / Emeritus Faculty etc. (10)

Table B. 5.10a List of Adjunct faculty

S. No	Details of the Adjunct Faculty
1	Dr. T. N. P. Nambiar, Professor, Department of EEE, Vidya Academy of Science and Technology, Thrissur, Kerala.
2	Dr Rajeev Thottappillil, Professor, Department of Electromagnetic Engineering, KTH Royal Institute of Technology, Stockholm, Sweden

Number of hours spent by Adjunct Faculty in department

Table B. 5.10b Adjunct faculty spend hours in EEE department

S. No	Year	Semester	Hours/Sem	Hours/Year
1	2015-16	Odd	51	97.5
2	2015-16	Even	46.5	
3	2016-17	Odd	25.5	59
4	2016-17	Even	33.5	
5	2017-18	Odd	43	51.5
6	2017-18	Even	8.5	

Table B. 5.10c Adjunct faculty in EEE department during 2015-16 ODD SEM

Sl No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr T N P Nambiar	8/07/15;8.45 am – 10.45 am	2	Review I
2	Dr T N P Nambiar	8/07/15;11 am – 1 pm	2	
3	Dr T N P Nambiar	8/07/15;2pm– 4.30 pm	2.50	
4	Dr T N P Nambiar	8/07/15;5 pm – 7 pm	2	Demonstration of Lab

				Experiments
5	Dr T N P Nambiar	9/07/15;8.45 am – 10.45 am	2	Review I
6	Dr T N P Nambiar	9/07/15;11 am – 1 pm	2	
7	Dr T N P Nambiar	9/07/15;2pm – 4.30 pm	2.50	
8	Dr T N P Nambiar	9/07/15;5 pm – 7 pm	2	Demonstration of Lab Experiments
9	Dr T N P Nambiar	21/09/15;8.45am – 10.45 am	2	Review II
10	Dr T N P Nambiar	21/09/15;11 am – 1 pm	2	
11	Dr T N P Nambiar	21/09/15;2pm – 4.30 pm	2.50	
12	Dr T N P Nambiar	21/09/15;5 pm – 7 pm	2	Demonstration of Lab Experiments
13	Dr T N P Nambiar	22/09/15;8.45am – 10.45 am	2	Review II
14	Dr T N P Nambiar	22/09/15;11 am – 1 pm	2	
15	Dr T N P Nambiar	22/09/15;2pm – 4.30 pm	2.50	
13	Dr T N P Nambiar	22/09/15;5 pm – 7 pm	2	Demonstration of Lab Experiments
14	Dr T N P Nambiar	07/10/15;8.45am – 10.45 am	2	Review II
15	Dr T N P Nambiar	07/10/15;11 am – 1 pm	2	
16	Dr T N P Nambiar	07/10/15;2pm – 4.30 pm	2.50	
17	Dr T N P Nambiar	07/10/15;5 pm – 7 pm	2	Demonstration of Lab Experiments
18	Dr T N P Nambiar	08/10/15;8.45am – 10.45 am	2	Review III
19	Dr T N P Nambiar	08/10/15;11 am – 1 pm	2	
20	Dr T N P Nambiar	08/10/15;2pm – 4.30 pm	2.50	
21	Dr T N P Nambiar	08/ 10/15;5 pm – 7 pm	2	Demonstration of Lab Experiments
		Total	51	

Table B. 5.10d Adjunct faculty in EEE department during 2015-16 EVEN SEM

SI No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr T N P Nambiar	21/03/16;8.45am – 10.45 am	2	Review
2	Dr T N P Nambiar	21/03/16;11 am – 1 pm	2	
3	Dr T N P Nambiar	21/03/16;2pm– 4.30 pm	2.50	
4	Dr T N P Nambiar	21/03/16;5 pm – 7 pm	2	Demonstration of Lab Experiments
5	Dr T N P Nambiar	22/03/16;8.45am – 10.45 am	2	Review
6	Dr T N P Nambiar	22/03/16;11 am – 1 pm	2	
7	Dr T N P Nambiar	22/03/16;2pm – 4.30 pm	2.50	
8	Dr T N P Nambiar	22/03/16;5 pm – 7 pm	2	Demonstration of Lab Experiments
9	Dr T N P Nambiar	23/03/16;8.45am – 10.45 am	2	Review
10	Dr T N P Nambiar	23/03/16;11 am – 1 pm	2	
11	Dr T N P Nambiar	23/03/16;2pm – 4.30 pm	2.50	
12	Dr T N P Nambiar	23/03/16;5 pm – 7 pm	2	Demonstration of Lab Experiments
13	Dr T N P Nambiar	15/04/16;8.45am – 10.45 am	2	Faculty Interaction
14	Dr T N P Nambiar	15/04/16;11 am – 1 pm	2	
15	Dr T N P Nambiar	15/04/16;2pm – 4.30 pm	2.50	
13	Dr T N P Nambiar	15/04/16;5 pm – 7 pm	2	Demonstration of Lab

				Experiments
14	Dr T N P Nambiar	22/04/16;8.45am - 10.45 am	2	Review II
15	Dr T N P Nambiar	22/04/16;11 am - 1 pm	2	
16	Dr T N P Nambiar	22/04/16;2pm - 4.30 pm	2.50	
17	Dr T N P Nambiar	22/04/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
18	Dr T N P Nambiar	23/04/16;8.45am - 10.45 am	2	Review II
19	Dr T N P Nambiar	23/04/16;11 am - 1 pm	2	
20	Dr T N P Nambiar	23/04/16;2pm - 4.30 pm	2.50	
21	Dr T N P Nambiar	23/04/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
			46.50	

Table B. 5.10e Adjunct faculty in EEE department during 2016-17 ODD SEM

SI No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr T N P Nambiar	4/07/16;8.45 am - 10.45 am	2	Review I
2	Dr T N P Nambiar	4/07/16;11 am - 1 pm	2	
3	Dr T N P Nambiar	4/07/16;2pm- 4.30 pm	2.50	
4	Dr T N P Nambiar	4/07/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
5	Dr T N P Nambiar	5/07/16;8.45 am - 10.45 am	2	Review I
6	Dr T N P Nambiar	5/07/16;11 am - 1 pm	2	
7	Dr T N P Nambiar	5/07/16;2pm - 4.30 pm	2.50	
8	Dr T N P Nambiar	5/07/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
9	Dr T N P Nambiar	27/07/16;8.45 am - 10.45 am	2	Faculty Interaction
10	Dr T N P Nambiar	27/07/16;11 am - 1 pm	2	
11	Dr T N P Nambiar	27/07/16;2pm - 4.30 pm	2.50	
12	Dr T N P Nambiar	27/07/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
		TOTAL	25.50	

Table B. 5.10f Adjunct faculty in EEE department during 2016-17 EVEN SEM

SI No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr T N P Nambiar	23/12/16;8.45 am - 10.45 am	2	Review I
2	Dr T N P Nambiar	23/12/16;11 am - 1 pm	2	
3	Dr T N P Nambiar	23/12/16;2pm- 4.30 pm	2.50	
4	Dr T N P Nambiar	23/12/16;5 pm - 7 pm	2	Demonstration of Lab Experiments
5	Dr T N P Nambiar	10/1/17;8.45 am - 10.45 am	2	Review II
6	Dr T N P Nambiar	10/1/17;11 am - 1 pm	2	
7	Dr T N P Nambiar	10/1/17;2pm - 4.30 pm	2.50	
8	Dr T N P Nambiar	10/1/17;5 pm - 7 pm	2	Demonstration of Lab Experiments
9	Dr T N P Nambiar	11/1/17;8.45 am - 10.45 am	2	Review II
10	Dr T N P Nambiar	11/1/17;11 am - 1 pm	2	
11	Dr T N P Nambiar	11/1/17;2pm - 4.30 pm	2.50	
12	Dr T N P Nambiar	11/1/17;5 pm - 7 pm	2	Demonstration

				of Lab Experiments
13	Dr Rajeev Thottappillil	17/1/17; 9.30am -12.30 pm	3	Faculty Development Program
14	Dr Rajeev Thottappillil	17/1/17; 2pm - 4 pm	2	
15	Dr Rajeev Thottappillil	18/1/17; 9.30am -12.30 pm	3	Faculty Development Program
			33.50	

Table B. 5.10g Adjunct faculty in EEE department during 2017-18 ODD SEM

SI No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr Rajeev Thottappillil	6/7/17;8.45 am - 10.45 am	2	Faculty Development Program
2	Dr Rajeev Thottappillil	6/7/17;11 am - 1 pm	2	
3	Dr Rajeev Thottappillil	6/7/17;2pm- 4.30 pm	2.50	
4	Dr Rajeev Thottappillil	7/7/17;8.45 am - 10.45 am	2	Faculty Development Program
5	Dr Rajeev Thottappillil	7/7/17;11 am - 1 pm	2	
6	Dr Rajeev Thottappillil	7/7/17;2pm - 4.30 pm	2.50	
7	Dr Rajeev Thottappillil	8/7/17;8.45 am - 10.45 am	2	Faculty Development Program
8	Dr Rajeev Thottappillil	8/7/17;11 am - 1 pm	2	
9	Dr Rajeev Thottappillil	8/7/17;2pm - 4.30 pm	2.50	
10	Dr T N P Nambiar	12/7/17;8.45 am - 10.45 am	2	Review
11	Dr T N P Nambiar	12/7/17;11 am - 1 pm	2	
12	Dr T N P Nambiar	12/7/17;2pm - 4.30 pm	2.50	
13	Dr T N P Nambiar	12/7/17;5 pm - 7 pm	2	Demonstration of Lab Experiments
14	Dr T N P Nambiar	13/7/17;8.45 am - 10.45 am	2	Review
15	Dr T N P Nambiar	13/7/17;11 am - 1 pm	2	
16	Dr T N P Nambiar	13/7/17;2pm - 4.30 pm	2.50	
17	Dr T N P Nambiar	13/7/17;5 pm - 7 pm	2	Demonstration of Lab Experiments
18	Dr T N P Nambiar	23/9/17;8.45 am - 10.45 am	2	Review
19	Dr T N P Nambiar	23/9/17;11 am - 1 pm	2	
20	Dr T N P Nambiar	23/9/17;2pm - 4.30 pm	2.50	
			43.00	

Table B. 5.10h Adjunct faculty in EEE department during 2017-18 EVEN SEM

SI No.	Name of Adjunct Faculty	Date and Time	Hours	Work
1	Dr T N P Nambiar	11/01/18;8.45 am - 10.45 am	2	Review
2	Dr T N P Nambiar	11/01/18;11 am - 1 pm	2	
3	Dr T N P Nambiar	11/01/18;2pm- 4.30 pm	2.50	
4	Dr T N P Nambiar	11/01/18;5 pm - 7 pm	2	Demonstration of Lab Experiments
			8.50	

CRITERION 6	Facilities and Technical Support	80
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6.1 Adequate and well equipped Laboratories, and technical manpower (40)

Table B.6.1 Laboratory detail

S. No	Name of the Laboratory	No of students per setup (Batch size)	Name of the Important Equipment	Weekly utilization status (all the courses for which lab is utilized)	Technical Manpower Support		
					Name of Technical staff	Designation	Qualification
1	Electrical Machines lab	3-4	<ul style="list-style-type: none"> • 5kVA, 3Φ salient pole Alternator, • 2.2kW, 3Φ Induction Generator, • 3kVA, 3Φ Cylindrical pole Alternator, • 3kW Synchronous Induction Motor, • 3kW, 3Φ Slip ring Induction Motor, • 3Φ, 2.2kW Induction motor, • 1Φ, .75kW, Single Phase Induction Motor, • 1kVA 1Φ Transformer, 3Φ Transformer, • 2.2kW DC Shunt Generator, • 2.2kW DC Compound Generator, • 1.5kW, Series Motor, • 1.5kW, Shunt Motor, • 1.5kW, Compound motor. 	<p>2015-16 : Odd sem : 8 hrs Even sem : 8 hrs +6 project</p> <p>2016-17 : Odd sem : 8 hrs Even sem: 8 hrs +6 hrs project</p> <p>2017-18 : Odd sem : 8 hrs Even sem: 8 hrs +6 hrs project</p> <p>2018-19 : Odd sem : 8 hrs</p>	Mr. R. R. Nagharaj	Sr. Instructor	DEEE
					Mr. P. V. Vinod	Lab Instructor	ITI
2	Control and Instrumentation Lab	3	<ul style="list-style-type: none"> • NI My Rio • NI My Daq • E-Health Sensor Platform kit • DC Servo Motor PID Controller • Transfer Function of DC Servo Motor • μC & Matlab Based Servo & Stepper Motor Driver • Zed Board • Digital IC Trainer • Motor Control Unit • Digital Real Time Oscilloscope 	<p>2015-16 : Odd sem : 8 hrs Even sem: 16hrs + 3 hrs project</p> <p>2016-17 : Odd sem: 16 hrs Even sem: 16hrs + 4 hrs project</p> <p>2017-18 : Odd sem: 18hrs Even sem: 16hrs + 4 project</p> <p>2018-19 : Odd sem : 16hrs</p>	Mr. M. Jayakumar	Lab Assistant	I.T.I Electrician
3	Power Electronics Lab	3	<ul style="list-style-type: none"> • Digital Storage Oscilloscope • DC Multiple Power supply • Function Generator • 1ϕ Dimmer stat • 3ϕ Dimmer stat 	<p>2015-16 : Odd sem: 18hrs Even sem: 12hrs + 8 hrs project</p> <p>2016-17 : Odd sem : 18hrs Even sem: 22hrs</p>	Mrs. V. Malathi	Sr. Lab Assistant	D.E.C.E
					Mr. S. Sundarraj	Lab Instructor	D.E.E.E

				+ 8 hrs project 2017-18 : Odd sem:18 hrs Even sem:22hrs + 8 hrs project 2018-19 : Odd sem: 10hrs			
4	Electrical Drives Lab	3-4	<ul style="list-style-type: none"> • DSPACE ACEKIT 1104. • 86 BLS 98 Brushless DC Motor. • Control panel with PLC Training kit. • Induction motor control module. • Induction motor 1phase • 3phase induction motor • dc motor • DC Motor generator Set • PMSM Motor 	2018-19 Odd Sem:10hrs	Mr.Sidhan P.K	Lab Assistant	ITI
5	Power system Lab	3-4	<ul style="list-style-type: none"> • Three Phase Alternator • Synchroscope • IEEE 5 Bus System • Transmission Line Model • Shunt Reactor • Single Phase Induction Motor • Single Phase Alternator • Induction Generator • Injection Transformer 	2018-19 Odd Sem:8hrs	Mr. C. Rajinikandh	Lab Assistant	B.E.,
6	Renewable Energy lab	3	<ul style="list-style-type: none"> • Weather Monitoring System • GPS-SAT Receiver • LCR Meter Model:LCR55A • True RMS Digital Multimeter Model:Fluke115 • 600A True RMS AC/DC Clamp meter Fluke317 • Solar Power Meter Solar100 • DSO TDS2014C 4 Channel 100MHz • 3Phase AC PM Wind Turbine 300W,24V DC • PMSG 0.5kW, 500 rpm, 12pole, 3 Phase, 200V, 50 HZ • Titanium Electrolyzer • Fuel Cell 20W • Solar Panel Model: SW 70 poly/RHA, 	Regular-2 hrs-lab Lab practice-5 hrs UG & PG =10hrs (project)	Mr. C. Rajinikandh	Lab Assistant	B.E.,

			<p>70W</p> <ul style="list-style-type: none"> • DC pump-24V , 13A • Altium Nano Board 3000 with Xilinx Spartan 3AL • PV Panel Model:PVL68 (Amphors), 68W • AC Pump, monoblock, 3Phase, 1HP • Induction Motor, 1.1kW,1000rpm • DC Shunt Motor, 1.1kW,1500rpm • IPM Based Power Module, 3Phase • Motor Driver DC-AC IRAMS10UP60B • Semikron Inverter MDB6C1600/440-18F+MDB6C1600/440-15F • Universal Programmer • Alternator - DC Motor, 1kVA, 1500 rpm, - 1.5kW • Grid Tied Inverter - 1 phase 				
7	Embedded systems Lab	1	<ul style="list-style-type: none"> • ARM7 Boards (LPC 2148, 2129, 2468). • Mbed NXP LPC 1768, • Rasp Berry Pi, • Beagle Bone Black, • Arduino (Uno, Mega, Due) • LPC 4357 Dual Core NXP Arm Cortex Board, • Sparten 6 FPGA, • Microchip(MPLAB ICD2 Debugger, DEM HPC Explorer), • Node MCU, • DSP KITS (TMS320C6713 Starter and Trainer Kits, • C2000 Piccolo Launch pad), • MSP 430, EBOX MINI PC 486X. • Microsoft DOT Net kit – SJJEDK2, • Robots Platforms (I-Create Premium, Lego 9797, Spark–III, IV,V) • XbeeModulesGSM/ GPS Modems 	<p>2015-16 : Odd sem: 16 hrs Even sem:12hrs + 8 hrs project</p> <p>2016-17 : Odd sem :16hrs Even sem:12hrs + 8 hrs project</p> <p>2017-18 : Odd sem:22 hrs Even sem:10hrs + 8 hrs project</p> <p>2018-19 : Odd sem: 10hrs</p>	Mr. Sudharsan R.	Sr. Lab Assistant	Diploma in Electronics Engineering

8	Electrical Workshop	4	<ul style="list-style-type: none"> • Wiring accessories • Tools 	18 hours in all semesters	Mr. R. Thirunjanam Mr. K. Mohandas	Lab instructor	ITI Electrician
9	Basic Electrical Engineering lab	3	<ul style="list-style-type: none"> • Oil test kit, • 3phase induction motor, • 1phase induction motor, • DSO 	1.Workshop and simulation lab 2.Electrical and Electronics Engineering lab	Mr. P. Manikandan	Lab assistant	ITI (WIREMAN)

6.2 Maintenance Schedule and Overall ambience

Cleanliness of a laboratory is a prime concern for good teaching/learning ambience. The electrical appliances (fan,light,AC) are the next significant component of the laboratory. Any laboratory has several equipments specific to its own domain. Each of such equipments have to be in good working condition during the conduct of any laboratory class. Proper maintenance and servicing on a periodic basis is done in all the laboratories. Any deficit of equipment/ test kit is noted at the beginning of the semester and efforts are taken to procure the same. The consumable components of laboratory get worn out (or) get damaged. These items need to be purchased periodically as when need arises. Annually each laboratories are monitored for their assets and a status report is prepared. Some components which are obsolete are disposed from time to time. The maintenance schedule carried out in Electrical and Electronics Engineering Department is attached below:

Table B.6.2 Maintenance schedule of the laboratory

Sl. No	Task	Frequency Daily/Weekly / Monthly/yearly	Performed By	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec
1	Lab cleaning	Weekly	House keeping	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
2	Multimeter checking	Monthly	Lab Staff	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
3	PCB project board making	Half yearly	Lab Staff					✓							✓
4	PCB board testing	Half yearly	Lab Staff					✓							✓
5	1X and 10X probe testing	Daily	Lab Staff	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
6	AC, DC , Fluke meters & wattmeters testing	Monthly	Lab Staff	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
7	PE Experiment kit testing	Half yearly	Lab Staff					✓							✓
	Banana Pins soldering	Half yearly	Lab Staff					✓							✓
8	Consumable purchasing	Half yearly	Lab Staff					✓							✓
9	Equipment purchasing (if any)	Yearly	Lab In-charge & Lab Staff					✓							
10	Fault Equipment servicing (if any)	Half yearly	Lab Staff					✓							✓
11	Stock Verification	Yearly	Lab In-charge & Lab Staff					✓							
12	Scrap items issue (if any)	Yearly	Lab In-charge & Lab Staff					✓							

Overall ambience in all the labs are good with lighting facilities and air circulation



6.3 Safety measures in Laboratories (10)

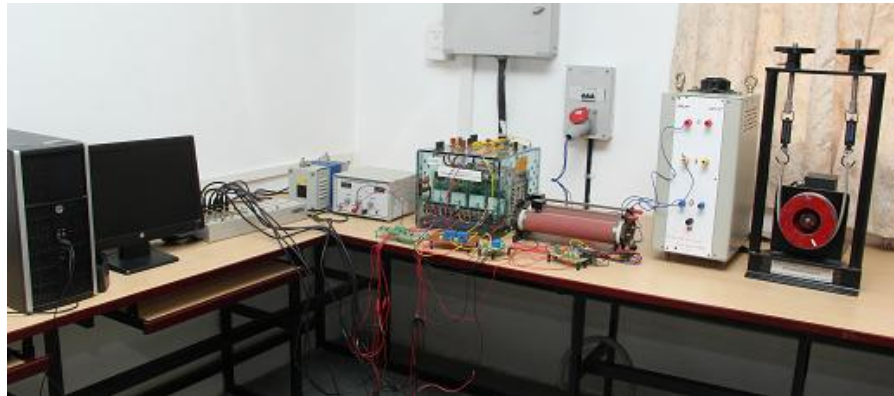
Table B.6.3 Safety measures in laboratories

S.No	Name of the Laboratory	Safety measures
1	Electrical Machines lab	First Aid, Fire Extinguisher, Rubber Mat, Safety Instruction Board, MCB, Safety precautions chart, Treatment against shock chart, Emergency Exit
2	Control and Instrumentation Lab	ELCB, First Aid kit, Fire extinguisher , Safety precautions chart, Treatment against shock chart Emergency Exit
3	Power Electronics Lab	ELCB, First Aid kit, Fire extinguisher , Safety precautions chart, Treatment against shock chart Emergency Exit
4	Electrical Drives Lab	First Aid Box, Fire extinguisher, Safety Precautions chart, Treatment against Shock Chart Emergency Exit
5	Power system Lab	First Aid Box, Fire extinguisher, Safety Precautions chart, Rubber Mat, ELCB, Equipment Double Earthing, Working table earthing, RCBO protection, MCB protection for Working table and lighting Separate Earthing for Lab Emergency Exit
6	Renewable Energy lab	Fire Extinguisher, Rubber mat, Equipment Double Earthing, Working table earthing, RCBO protection, MCB protection for Working table and lighting Separate Earthing for Lab Emergency Exit
7	Embedded systems Lab	MCB, Fire extinguisher, Rubber mat, First aid kit, Rules and Safety Precaution Board. Emergency Exit
8	Electrical Workshop	First aid box, ELCB, Fire extinguisher, Safety precaution chart Emergency Exit
9	Basic Electrical Engineering lab	Rubber mat, Fire extinguisher, First aid kit, Emergency Exit

6.4 Project laboratory (20)

Table B.6.4 Project Laboratory

Lab Photo	Description
	<p>Project Lab: Intelligent Machines Lab Venue : Power Electronics Application to Power Systems Description: This project Lab has facilities Power Quality Analyser, Three phase inverters, Three phase AC – DC /AC – AC converter, Four channel Digital Storage Oscilloscope, dSPACE Control desk, etc. Major Research projects completed in this lab are An Intelligent Controller Based Shunt Hybrid Filter for Harmonic Reduction in Adjustable Speed Drives (DST Funded, SR/FTP/ETA-71/2012 DT.01.01.2013), Reactive power management of grid connected SCIG using STATCOM, LabVIEW based harmonic analysis, Real time energy management and bus voltage control in solar powered DC microgrid, Adaptive transient tracking harmonic detection method for Power Quality Improvement, Artificial Neural Network based controller for residential solar photovoltaic system, Three phase Auto-tuned Shunt Hybrid Filter for power quality improvement, SSSC to enhance power transfer capability in 5 bus system etc.</p>
	<p>Project Lab: PLC Based Drives Control Venue : Drives and Control Lab Description: Siemens Simatic S7 200 PLC with Analog and Digital Modules, Siemens Variable Frequency Drive (VFD) with Induction Motor and Siemens HMI. The VFD is controlled through PLC and also integrated with HMI through Siemens Totally Integrated Automation (TIA) Portal.</p>

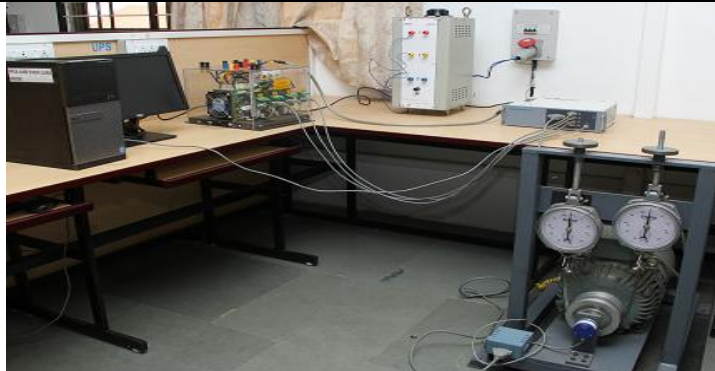


Project Lab: dSPACE Based Drives Control

Venue : Drives and Control Lab

Description:

The DS1104 R&D Controller Board is a piece of hardware that upgrades PC to a powerful development system for rapid control prototyping. The real-time hardware based on PowerPC technology and its set of I/O interfaces makes the board an ideal solution for developing controllers in various industrial fields. Real-Time Interface provides Simulink blocks for convenient configuration of A/D, D/A, digital I/O lines, incremental encoder interface and PWM generation. The industrial motors can be controlled by implementing various control strategies like PI control, Vector control, Direct Torque Control etc.,



Project Lab: FPGA Based Drives Control

Venue : Drives and Control Lab

Description:

FPGA Xilinx blockset is integrated with Matlab and FPGA can be directly controlled from Matlab. The setup comprises of Xilinx FPGA Zynq Dual ARM Cortex with communication ports, isolated Voltage and Current sensors, ADC, DAC, PWM Card, Encoder interface and Analyzer with DSO. Can be used for implementing various control strategies in Industrial motor drives.



Project Lab: Intelligent Control

Venue : Measurements and Instrumentation Lab

Description:

Control and instrumentation Lab is set-up with the state-of-the-art infrastructure including MATLAB, LabVIEW, National Instruments. Our Labs are equipped with advanced digital control trainer kits, MATLAB/microcontroller/FPGA based servo and stepper motor drive, PID controller tuning for studying system response. Experiments also include NI myDAQ, myRIO and ELVIS II based plants such as inverted pendulum (rocket launching, Segway), Vertical Take-Off and Landing (helicopter), Pitsco Tetrix Prime robot, Digilent Zed board FPGA training kits for controller design and a small fleet of Parrot mini drones for UAV research. Bachelors, masters and doctoral students are trained extensively to industrial standards for smooth transition in their career after graduation.



Project Lab: Scaled down IEEE 5 Bus System

Venue: Power Systems Lab

Description: 100kV, 100MVA IEEE 5 bus system has been scaled down to 400V, 3kVA. It has the provision for series and shunt compensation. Data can be collected in two modes. One is using digital meter on Modbus protocol. Another is using simultaneous sampling DAQ for transient analysis.



Project Lab: Smart Micro Grid

Venue: Renewable Energy Lab

Description: 5 bus scale down model of smart distribution system is available. It can be energized by solar, wind and lab generators. The electrical parameters are measured using digital meters. Load management and battery management can also be performed.



Project Lab: Robotics and Embedded Systems

Venue: Embedded Systems Lab

Description: A project space is provided to carry out projects related to embedded systems. It has all the facilities like embedded kits and software related to embedded systems.

CRITERION 7	Continuous Improvement	75
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7.1 Action taken based on the results of evaluation of each of the COs, POs and PSOs(30)

POs	Target Level	Attainment Level	Observations
<p>PO1: Engineering knowledge: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.</p>			
PO1	2.0	2.49	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Introduce animation, simulation and video based lectures. Action 2: Encourage field visits. Action 3: Tutorials based on application of fundamental engineering knowledge will be included Action 4: Remedial classes have been conducted after identifying weak students. Active cooperative learning has been introduced</p>			
<p>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.</p>			
PO2	2.0	2.51	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Conduct periodical workshops on core engineering areas Action 2: Introduce Mini project as a part of evaluation in identified laboratory courses. Action 3: Guide Students to perform proper literature survey for analyzing and solving complex engineering problems. Action 4: Give project to students, which helps them to improve their knowledge of using proper literature for solving problems Action 5: Arrange Industrial visits for the students to gain the knowledge on complex engineering problems Action 6: Engage tutorial to improve the problem solving skills of the student. Action 7: Give Individual and group assignments.</p>			
<p>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.</p>			
PO3	2.0	2.56	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Introduce Open Lab to design and develop products towards societal benefits. Action 2: Encourage students to take part in product development contests. Action 3: Motivate students to include all standard parameters and constraints according to National and International safety norms and to address environmental concerns.</p>			
<p>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.</p>			

PO4	2.0	2.53	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Introduce laboratory component in the core courses.</p> <p>Action 2: Encourage Students to go for training/internship in industries/premier institutions.</p>			
<p>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.</p>			
PO5	2.0	2.60	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Include the recent advancements in modern tool like Labview, Ansys Maxwell, Python, IoT, dSpace, etc.</p> <p>Action 2: Encourage students to use the modern tool/research facilities available in department for the projects and Open Lab</p> <p>Action 3: Arrange Workshops on modern tools and its applications</p>			
<p>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</p>			
PO6	2.0	2.64	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Make Industrial Visits for identified courses</p> <p>Action 2: Introduce Live in Labs which gives solution for societal needs.</p>			
<p>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.</p>			
PO7	2.0	2.84	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Encourage students to involve them in societal activities through Live in Labs</p> <p>Action 2: Introduce mini projects in environmental science course.</p> <p>Action 3: Arrange Local Visits within the campus like Substation, Effluent treatment, hazard and waste management plants will be arranged</p>			
<p>PO8: Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.</p>			
PO8	2.0	2.68	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Check Plagiarism for all project reports and technical papers</p> <p>Action 2: Introduce Human Value courses/Programmes.</p> <p>Action 3 : Arrange Career guidance program, corporate lectures and motivational talks will be arranged to gain knowledge of professional ethics and responsibilities</p>			
<p>PO9: Individual and team work: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings</p>			

PO9	2.0	2.68	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Introduce Open Lab which will be a group activity.</p> <p>Action 2: Introduce Mini Project in the laboratory courses.</p> <p>Action 3: Encourage Students for participation in social activities like visit to orphanages, old age home, tribal schools and Swatch Bharath as group activity.</p>			
<p>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.</p>			
PO10	2.0	2.64	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Introduce group discussions, presentation and soft skill training.</p> <p>Action 2: Encourage Students to present papers in National/ International conferences.</p>			
<p>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.</p>			
PO11	2.0	2.94	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Continuous monitoring of project management in open lab and project.</p> <p>Action 2: Introduce compulsory management course.</p> <p>Action 3: The cost estimation will be included as a part of project assessment, this will improve the knowledge regarding project management and finance</p>			
<p>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.</p>			
PO12	2.0	2.57	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Include Self learning component in specific courses.</p> <p>Action 2: Provide Wifi facility and ICT enabled class rooms.</p> <p>Action 3: Arrange Guest Lectures on new technological developmental tools and knowledge of new Products. Students are encouraged to follow classes like NPTEL etc</p>			
<p>PSO1: Awareness of Future Technology: Develop solutions for future systems using smart technologies</p>			
PSO1	2.0	2.63	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Identify future technologies and include as an elective courses.</p> <p>Action 2: Encourage students to select open elective courses offered by other departments.</p>			
<p>PSO2: Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions</p>			
PSO2	2.0	2.62	Attainment is above target. Increase the threshold and range for attainment to increase the target level.
<p>Action 1: Upgrade the Renewable Energy Lab, Power Electronics Lab, Measurements and Instrumentation lab and Embedded systems Lab.</p> <p>Action 2: Develop Electric Drives & Control Lab and Power Systems Lab with research facilities.</p>			

7.2 Academic Audit and Actions Taken during the period of Assessment

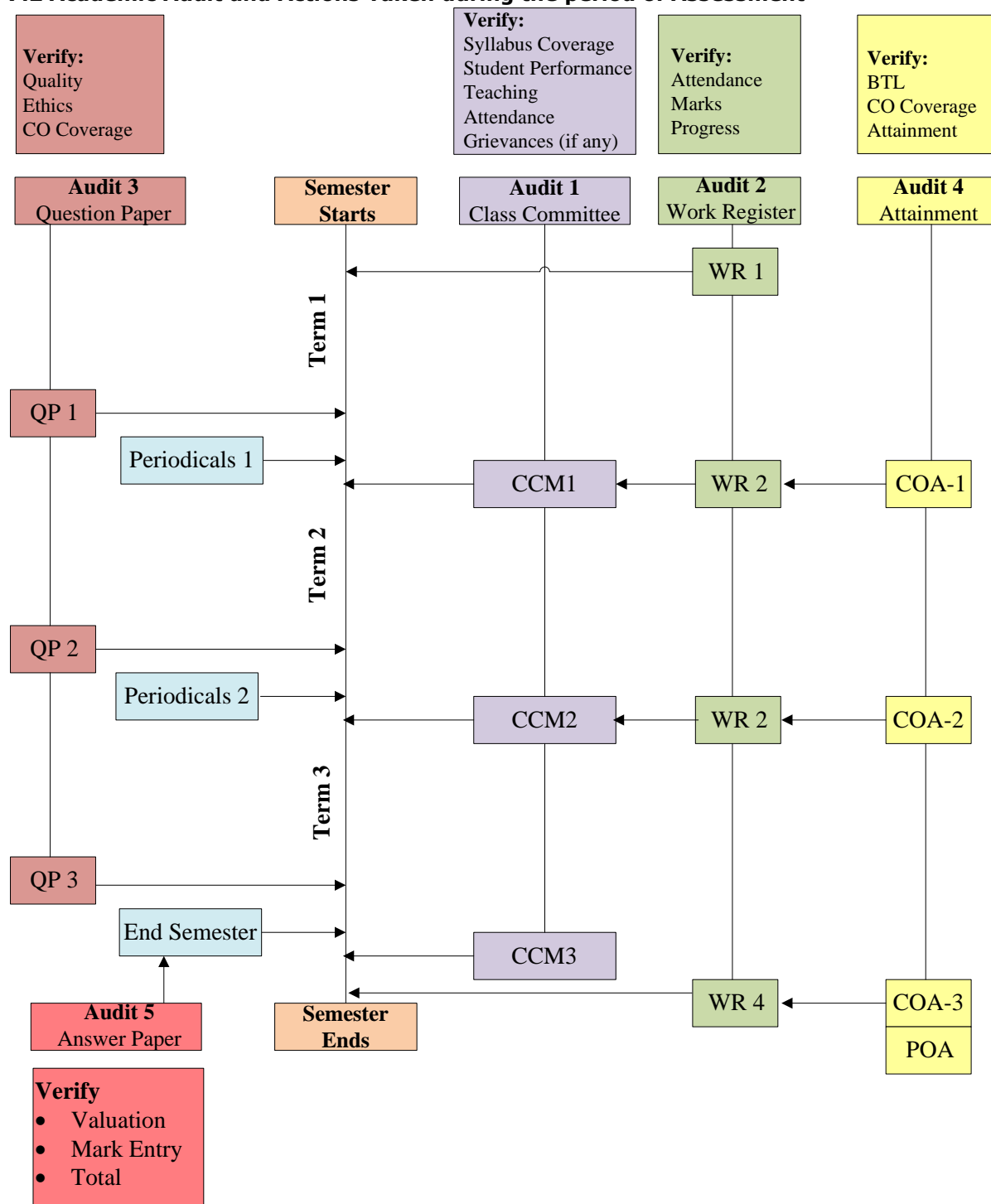


Figure B.7.2 Academic audit

The department has a simple audit system in place to monitor the quality of the teaching and learning process to ensure that the mission and vision of the University and in turn that of the department are maintained. The academic audit comprises of end semester question paper audit, review of end semester answer sheets, lab assessment, class committee meetings and feedback on faculty. Publication of research papers is also subject to an academic audit procedure.

Subject Mentors are appointed for each subject of the programme. The mentor/Senior faculty of the department scrutinizes the question papers for Periodial Tests and specifically the End Semester Examination.

Answer Sheets of End Semester Examination are also reviewed by the mentor/Senior Faculty of the department.

Class Committee Meetings are conducted before/after each Periodical Test and inputs from students and faculty are recorded and corrective measures if any are suggested on both sides. Each class is assigned a Class Coordinator (Senior Faculty in the department) who can be approached by students/faculty for any academic grievances.

To ensure fair feedback from students, faculty feedback is taken by a faculty not associated with the class at the beginning of the semester and any remedial actions necessary thereof is communicated by the Chairperson to the faculty on an affable note.

To preserve research standards of the University any paper publication with the University affiliation undergoes a Plagiarism check and steps are taken to ensure that Plagiarism is below 20% for any publication. A Reviewer finally evaluates the technical level of the paper.

7.3 Improvement in Placement, Higher Studies and Entrepreneurship

Table B.7.3 Placement, Higher Studies and Entrepreneurship details

Item	CAYm1 (2017-2018)	CAYm2 (2016-2017)	CAYm3 (2015-2016)
Total No. of Final Year Students (N)	106	129	110
No. of students placed in companies or Government Sector (x)	59	90	98
No. of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level Tests, GRE, GMAT etc.) (y)	10	13	3
No. of students turned entrepreneur in engineering/technology (z)	0	2	0

7.4. Improvement in the quality of students admitted to the program

Table B.7.4 Details of students admitted in B.Tech - EEE

Item		CAY (2018-19)	CAYm1 (2017-18)	CAYm2 (2016-17)
National Level Entrance Examination	No. of Students admitted			
	Opening Score/Rank			
	Closing Score/Rank			
State/Institute/Level Entrance Examination/Others (Amrita Engineering Entrance Examination)	No. of Students admitted	122	113	136
	Opening Score/Rank	520	488	1247
	Closing Score/Rank	20009	19433	25996
Name of the Entrance Examination for Lateral Entry or lateral entry details	No. of Students admitted			
	Opening Score/Rank			
	Closing Score/Rank			
Average CBSE/Any other Board Result of admitted students (Physics, Chemistry & Mathematics)		86.23	86.94	85.32

CRITERION 8	First Year Academics	50
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8.1. First Year Student-Faculty Ratio (FYSFR) (5)

Data for first year courses to calculate the FYSFR:

Table B.8.1. First year student faculty ratio

Year	Number of students (approved intake strength)	Number of faculty members (considering fractional load)	FYSFR	*Assessment = (5 × 20)/ FYSFR (Limited to 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

Table B.8.2 Qualification of faculty teaching first year common courses

Year	X	Y	RF	Assessment of faculty qualification $(5x + 3y)/RF$
CAY	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

8.3. First Year Academic Performance (10)

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

DEPARTMENT	NUMBER OF STUDENTS APPEARED IN THE EXAM	NUMBER OF SUCCESSFUL STUDENTS	TOTAL GRADE POINT OF ALL SUCCESSFUL STUDENTS	TOTAL GRADE POINT AVERAGE OF ALL SUCCESSFUL STUDENTS
			TOTAL	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 ENGINEERING	264	264	3938.94	7.46
ELECTRICAL AND ELECTRONICS ENGINEERING	108	108	1563.33	7.24
ELECTRONICS AND INSTRUMENTATION ENGINEERING	50	50	695.20	6.95
MECHANICAL ENGINEERING	244	244	3609.64	7.40
TOTAL	1239	1239	18189.50	7.34

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

DEPARTMENT	NUMBER OF STUDENTS APPEARED IN THE EXAM	NUMBER OF SUCCESSFUL STUDENTS	TOTAL GRADE POINT OF ALL SUCCESSFUL STUDENTS	TOTAL GRADE POINT AVERAGE OF ALL SUCCESSFUL STUDENTS
			TOTAL	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 ENGINEERING	197	197	3021.95	7.67
ELECTRICAL AND ELECTRONICS ENGINEERING	123	123	1847.38	7.51
ELECTRONICS AND INSTRUMENTATION ENGINEERING	51	51	754.32	7.40
MECHANICAL ENGINEERING	191	191	2984.49	7.81
TOTAL	1103	1103	17016.87	7.71

Table B.8.3c First year academic performance of the students for the year 2015-2016

DEPARTMENT	NUMBER OF STUDENTS APPEARED IN THE EXAM	NUMBER OF SUCCESSFUL STUDENTS	TOTAL GRADE POINT OF ALL SUCCESSFUL STUDENTS	TOTAL GRADE POINT AVERAGE OF ALL SUCCESSFUL STUDENTS
			TOTAL	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	4282.30	7.51
ELECTRONICS AND COMMUNICATION ENGINEERING	182	182	2609.57	7.17
ELECTRICAL AND ELECTRONICS ENGINEERING	108	108	1601.42	7.41
ELECTRONICS AND INSTRUMENTATION 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 (10)**8.4.1. Describe the assessment processes used to gather the data upon which the evaluation of Course Outcomes of first year is done (5)**

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 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 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 Figure 3.2.1. 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.

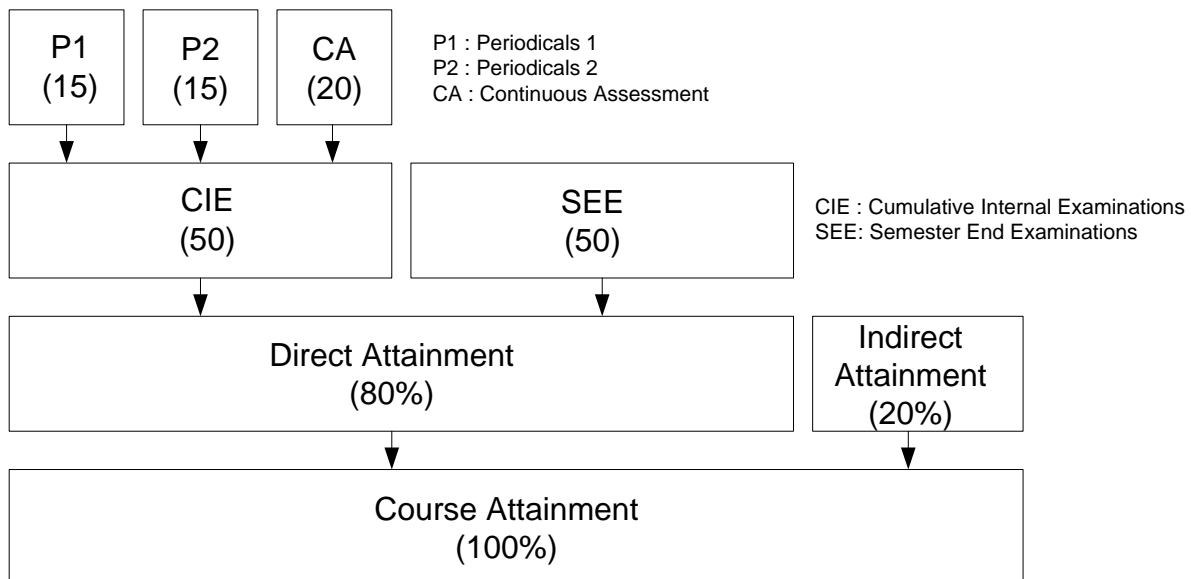
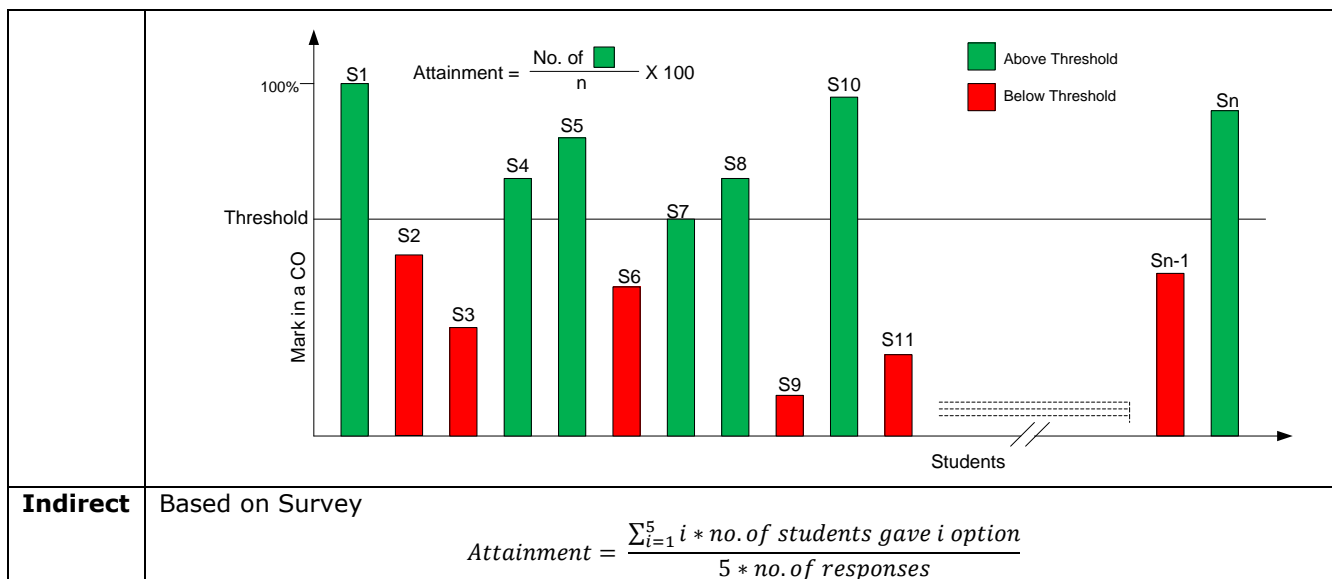


Figure B.8.4.1 CO attainment for theory courses

Inpods do the attainment calculation based on the following expression:

Direct	The direct part of the CO attainment is computed through exams. The percentage of students in the class who scored more than threshold percentage of marks in the respective CO is the attainment.
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8.4.2. Record the attainment of Course Outcomes of all first year courses (5)

Program shall have set attainment levels for all first year courses

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

COURSE TITLE	COURSE	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			
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			
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Table B.8.4.2b CO-Attainment Percentage 2014-2015

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6
CSE100	Computer Programming	62.33	66.11	64.90	66.22		
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			
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:

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
CSE100	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
	CO3	68.71	3	57.62	2	63.17	2.50	71.84	3	64.90	2.60	50.00	YES
	CO4	73.86	3	57.62	2	65.74	2.50	68.11	3	66.22	2.60	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
CSE180	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
	CO3	54.36	2	52.18	2	53.27	2.00	62.92	3	55.20	2.20	50.00	YES
	CO4	54.36	2	52.18	2	53.27	2.00	59.15	2	54.44	2.00	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
ENG112	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
	CO3	97.99	3	80.15	3	89.07	3.00	80.78	3	87.41	3.00	50.00	YES
	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												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
MAT112	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
	CO3	66.26	3	47.15	2	56.71	2.50	80.27	3	61.42	2.60	50.00	YES
	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

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
CHY100	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
	CO3	71.79	3	31.53	1	51.66	2.00	68.20	3	54.96	2.20	50.00	YES
	CO4												
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
CHY181	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
	CO3	69.62	3	51.23	2	60.43	2.50	76.13	3	63.57	2.60	50.00	YES
	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												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
PHY100	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
	CO3	76.65	3	40.10	2	58.37	2.50	74.32	3	61.56	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
PHY181	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
	CO3	99.02	3	79.08	3	89.05	3.00	76.04	3	86.45	3.00	50.00	YES
	CO4												
	CO5												
	CO6												

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

COURSE TITLE	COURSE	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 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 Engineering	2.20	2.60	2.20	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		
15MAT121	Vector Calculus and Ordinary Differential 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.8.4.2d CO-Attainment Percentage 2015-2016

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	80.20	84.87	84.87	86.53	86.53	86.53		

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 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:

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment (Yes/No)
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CSE 100	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
	CO3	91.33	3	86.74	3	89.04	3.00	75.60	3	86.35	3.00	50.00	YES
	CO4	90.35	3	86.74	3	88.55	3.00	75.85	3	86.01	3.00	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment (Yes/No)
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CSE 102	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
	CO3	86.69	3	29.64	1	58.16	2.00	75.60	3	61.65	2.20	50.00	YES
	CO4	81.63	3	29.64	1	55.64	2.00	75.85	3	59.68	2.20	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15ENG 111	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
	CO3	102.60	3	84.28	3	93.44	3.00	80.66	3	90.89	3.00	50.00	YES
	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												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MAT 111	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
	CO3	94.69	3	78.26	3	86.47	3.00	85.91	3	86.36	3.00	50.00	YES
	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

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MEC 100	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
	CO3	54.12	2	64.46	3	59.29	2.50	82.10	3	63.85	2.60	50.00	YES
	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.8.4.2e CO-Attainment Level-2016-2017(2015 onwards)

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
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 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					

Table B.8.4.2f CO-Attainment Percentage 2016-2017

COURSE TITLE	COURSE	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 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			
15MAT111	Calculus, Matrix Algebra	75.38	75.83	86.40	73.64	75.49	75.34		
15MAT121	Vector Calculus and Ordinary Differential 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:

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CSE 102	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
	CO3	95.29	3	72.85	3	84.07	3.00	62.00	3	79.66	3.00	50.00	YES
	CO4	93.21	3	72.85	3	83.03	3.00	55.00	2	77.43	2.80	50.00	YES
	CO5												
	CO6												
Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15ENG 111	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
	CO3	100.54	3	62.32	3	81.43	3.00	82.88	3	81.72	3.00	50.00	YES
	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												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MAT 121	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
	CO3	86.48	3	73.33	3	79.90	3.00	83.11	3	80.55	3.00	50.00	YES
	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 Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MEC 180	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
	CO3	76.57	3	43.21	2	59.89	2.50	62.09	3	60.33	2.60	50.00	YES
	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 Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target (%)	Attainment Yes/No
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15PHY 100	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
	CO3	79.22	3	59.87	2	69.54	2.50	74.33	3	70.50	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

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

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
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 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		
15MAT121	Vector Calculus and Ordinary Differential 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					

Table B.8.4.2h CO-Attainment Percentage 2017-2018

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
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 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 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			
15MAT111	Calculus, Matrix Algebra	72.79	74.86	85.31	71.83	73.84	73.43		
15MAT121	Vector Calculus and Ordinary Differential 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:

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CSE 180	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
	CO3	56.56	2	58.33	2	57.44	2.00	62.00	3	58.35	2.20	50.00	YES
	CO4	56.56	2	58.33	2	57.44	2.00	55.00	2	56.95	2.00	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MEC 100	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
	CO3	83.89	3	56.22	2	70.06	2.50	73.91	3	70.83	2.60	50.00	YES
	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

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MEC 180	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
	CO3	86.59	3	62.74	3	74.67	3.00	75.19	3	74.77	3.00	50.00	YES
	CO4	86.59	3	62.74	3	74.67	3.00	75.19	3	74.77	3.00	50.00	YES
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CH Y181	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
	CO3	80.87	3	45.92	2	63.40	2.50	74.82	3	65.68	2.60	50.00	YES
	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												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15PHY 100	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
	CO3	80.56	3	57.18	2	68.87	2.50	73.63	3	69.82	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

Course	COs	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
		(CIE)		(SEE)		50% of CIE and 50% of SEE				80% of Direct and 20% of Indirect			
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15PHY 181	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
	CO3	98.63	3	82.96	3	90.80	3.00	76.87	3	88.01	3.00	50.00	YES
	CO4												
	CO5												
	CO6												

8.5. Attainment of Program Outcomes from first year courses (20)

8.5.1. Indicate results of evaluation of each relevant PO and/or PSO if applicable (10)

Table B.8.5.1a PO-Attainment for 2014-2015

COURSE TITLE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Computer Programming	CSE100	2.64	2.65	2.66									
Computer Programming Lab	CSE180	2.27	2.27	2.27		2.33							
Cultural Education -1	CUL101						2.99	2.99	2.99	2.99	2.99	2.99	2.99
Cultural 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 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.8.5.1b PO-Attainment for 2015-2016

COURSE TITLE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Introduction to Aerospace Technology	15AES111	3	3		3		3	3		3	3		3
Introduction to Chemical 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 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 Technology	15ECE112	1.87	1.88	1.83									1.93
Fundamentals of Electrical and 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 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 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						

Table B.8.5.1c PO-Attainment for 2016-2017

COURSE TITLE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Introduction to Aerospace Technology	15AES111	2.53	2.60		2.40		2.67	2.44		2.80	2.50		2.42
Introduction to Chemical 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 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
Fundamentals of Electrical 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 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 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						

Table B.8.5.1d PO-Attainment for 2017-2018

COURSE TITLE	COURSE CODE	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Introduction to Aerospace Technology	15AES111	2.2	2.2		2.2		2.2	2.2		2.2	2.2		2.2
Introduction to Chemical Engineering	15CHE111	2.20	2.60		2.20	2.20			3.00				
Material Balances	15CHE112	2.04	0.86			3.00							
Mechanics: Statics and Dynamics	15CVL102	2.36	2.36										
Introduction to Civil 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 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 Technology	15ECE112	2.42	2.40	2.41									2.37
Fundamentals of Electrical and Electronics Engineering	15EEE111	2.58	2.62										
Workshop B	15EEE180	2.36	2.36	2.36					2.36	2.36	2.36		2.36
Communicative English I	15ENG111								2.76	2.46	2.83		2.70
Calculus, Matrix Algebra	15MAT111	2.80	2.80	2.80									2.82
Vector Calculus and Ordinary Differential Equations	15MAT121	2.94	2.95	2.95									2.94
Engineering Drawing –CAD	15MEC100	2.86	2.86	2.86	2.86		2.86				2.86		2.86
Engineering Drawing-CAD-II	15MEC101	3.00	3.00	3.00	3.00		3.00				3.00		3.00
Engineering Mechanics	15MEC102	3.00	3.00	3.00	3.00								3.00
Fundamentals of Mechanical Engineering	15MEC111	2.40	2.40	2.40	2.40		2.40	2.40		2.40			2.40
Workshop A	15MEC180	2.91	2.91	2.91		2.91				2.91	2.91		2.91
Chemistry	15CHY100	2.60	2.60	2.60									
Chemistry Lab.	15CHY181	2.75	2.75	2.75									
Physics	15PHY100	2.67	2.67										2.67
Physics Lab	15PHY181	2.97	2.97	2.97	2.97	2.97	2.97						

8.5.2. Actions taken based on the results of evaluation of relevant POs and PSOs (10)

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

PO Attainment Levels and Actions for improvement – CAY only – Mention for relevant POs

Table B.8.5.2 Observation and action taken

POs	Target Level	Attainment Level	Observations
PO1: Engineering Knowledge			
PO1	2.0	2.5	The target level was not attained by 15ASE111, 15MEC111, and 15ECE111 and the action taken are for the above mentioned courses for which the target was not met.
<p>Action 1: Include more examples involving applications of fundamentals in lectures.</p> <p>Action 2: Practical applications of engineering drawing skills are incorporated in the next syllabus revision.</p> <p>Action 3: Focus to enhance student's skill in CAD software. Course content is oriented towards the same.</p> <p>Action 4: More focus on discussions related to approaching a problem, using foundational engineering knowledge for solving problem is included.</p>			
PO2: Problem Analysis			
PO2	2.0	2.5	The overall target for the PO has been attained. In the spirit of continuous improvement, the corrective action will be taken for the courses, target level was not attained by 15ASE111, 15CVL102, 15MEC111, and 15ECE111.
<p>Action 1: Motivate the students to learn on their own and give presentations in class.</p> <p>Action 2: Scope of the course is widened to incorporate more fundamental topics in the next syllabus revision.</p> <p>Action 3: Course delivery to focus more on fundamental concepts and usage of the same to solve complex problems.</p> <p>Action 4: Solving numerical problems as typical examples on all topics within the class room.</p>			
PO3: Design/Development of Solutions			
PO3	2.0	2.6	The overall target for the PO has been attained. The target level was not attained by 15MEC111, and 15ECE111, and the action taken are for the above mentioned courses for which the target was not met.
<p>Action 1: Every lecture topic is accompanied by sample codes for different problem scenarios. The lectures also include code walk-through which discusses more the problem solving aspect rather than syntax.</p> <p>Action 2: The evaluation lab questions demand the students to code solutions for real-world problem scenarios.</p> <p>Action 3: In addition, the evaluation rubric places almost equal weightage on the design of solutions in par with the implementation</p>			
PO4: Conduct Investigations of complex problems			
PO4	2.0	2.1	The overall target for the PO has been attained. The target level was not attained by 15MEC111 and 15ECE111, and the action taken are for the above mentioned courses for which the target was not met.
<p>Action 1: The complex building drawings are separated by simple components for better understanding.</p> <p>Action 2: More fundamental topics are included in the next syllabus revision.</p> <p>Action 3: Course delivery to focus more on fundamental concepts and usage of the same to solve complex problems.</p>			
PO5 :Modern tools usage			
PO5	2.0	2.8	Attainment is more than target
Action 1: Level can be increased			
PO6 : Engineer and Society			
PO6	2.0	2.3	The overall target for the PO has been attained. The target level was not attained by 15MEC111 and 15ECE111, and the action taken are for the above mentioned courses for which the target was not met.
<p>Action 1: The practical project helps in motivating the students about the importance of civil engineering in community building.</p> <p>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.</p> <p>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.</p>			
PO7 : Environment and Sustainability			
PO7	2.0	2.4	The overall target for the PO has been attained. The target level

			was not attained by 15ASE111 and 15ECE111 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 sustainable and green solutions in future in class lectures.			
Action 2: The students are aware of the different branches of civil engineering with their applications.			
Action 3: Presentations from students will be encouraged.			
PO8 : Ethics			
PO8	2.0	2.3	Attainment is less than target
Action 1: Introduce Human Value courses/Programmes.			
Action 2: Arrange Career guidance program, corporate lectures and motivational talks will be arranged to gain knowledge of professional ethics and responsibilities			
PO9 : Individual & Teamwork			
PO9	2.0	2.5	The overall target for the PO has been attained. The target level was not attained by 15MEC100 and 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 engineering should be emphasized among the students.			
Action 2: Students are encouraged to work out/ discuss about real time problems applying the fundamentals learned.			
PO10 : Communication			
PO10	2.0	2.4	The overall target for the PO has been attained. The target level was not attained by 15MEC100, 15MEC101 15MEC111, and 15ECE111, and the action taken are for the 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	2.0	2.5	Attainment is more than target
Action 1: The cost estimation will be included as a part of project/assignment, this will improve the knowledge regarding project management and finance			
PO12 : Lifelong learning			
PO12	2.0	2.5	The overall target for the PO has been attained. The target level was not attained by 15ASE111, 15MEC111, and 15ECE111, and the action taken are for the above 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.			

CRITERION 9	Student support systems	50
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9.1 Mentoring system to help at individual level (5)

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(Annexure B 9.1*). This is supplemented by two automated software.
- Amrita vishwa vidyapeetham Management System (AUMS) Software: A master database holding all academic records(Annexure B 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(Annexure 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(Annexure B 9.7* & 9. 8*).

Batch Coordinator: A Batch Coordinator is nominated at the commencement of an academic programme. A senior Faculty so nominated coordinates the functioning of all the CAs of the batch; tracks the academic progress of the students; guides students on internships and higher studies and facilitates the students wishing to pursue the various programmes offered by Amrita Centre for International Programmes (ACIP).

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.

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 (Annexure 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 (Annexure B 9.10*).
- Professional Orientation of 2nd Year Students: Conducted for 2nd 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 (Annexure B 9.11*).
- Co-Curricular activities: Mentoring is provided to encourage students on all co-curricular 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 (Figure1). Categories of issues encountered are: interpersonal relationships, behavioral abnormalities, adjustment to the campus environment, emotional disturbances, family related problems etc.

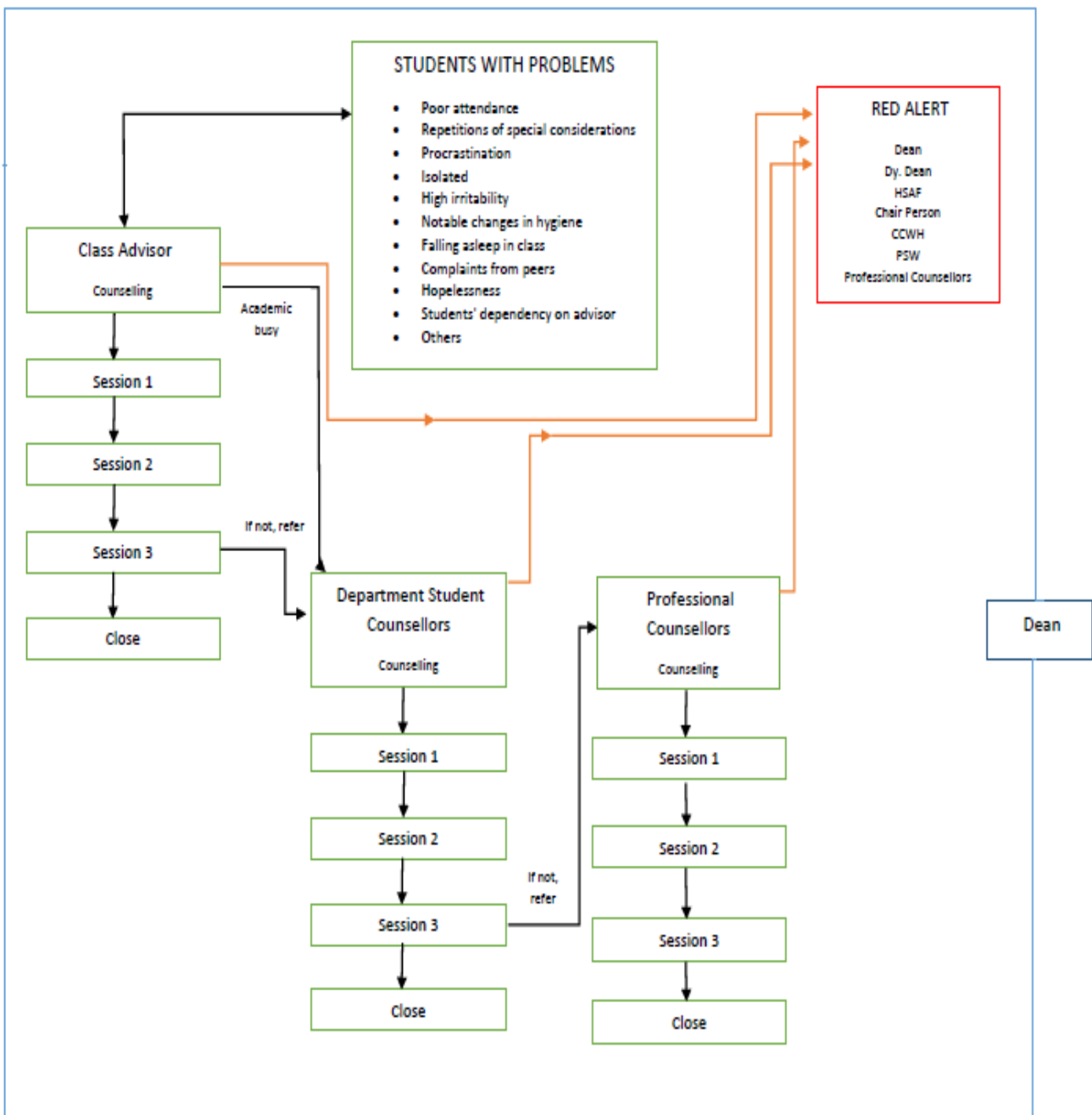


Figure B.9.1a The Counseling Work Flow

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 (Annexure 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 interpersonal 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 (Annexure B 9.12b*). A summary of counseling activities carried out by them is given at Annexure B 9.12c*. They also carry out training of the Dept Counselors (Annexure 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 handlingfaculty, 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 Annexure B 9.12e*. Minutes of one Counselors Meeting of 27 Jun 2018 is given at Annexure B 9.12f*. Follow up action is given at Annexure B 9.12g*, Annexure B 9.12h* and Annexure 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. (Annexure 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 (10)

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 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.

9.3. Feedback on facilities (5)

9.3.1 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 (Annexure 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 shown in Table B.9.2a below. The analysis of the report is given at Annexure B 9.14b*.

Table B.9.3.1a Exit Feedback 2016-2017 batch

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)							
S.No	Parameters	Very Good	Good	Average	Poor	Very Poor	Positivity
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
4	Hostel surroundings (Garden, Hygiene)	304	521	188	49	52	8.0

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
9	Hostel Room/Corridor Hygiene	258	471	245	69	71	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 Availability	239	473	247	84	71	4.5
13	Sports Facilities (Gym, 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 (News Papers, Magazines 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 Representatives	147	372	298	148	149	1.7
20	Computerized Gate pass Management System (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.9.3.1b Feedback on Department Facilities

Feedback from 2015-16 , 2016-17, 2017-18 & 2018-19 Batches - Report						
Sl no	Parameters	Very Good	Good	Average	Poor	Very 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 (5)

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 2nd/ 3rd 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 (10)

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 self-awareness 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.

In the Table B.9.5a below, please find the number of students undergone career counselling in the last four academic years.

Table B.9.5a Number of students undergone career counselling

Academic Year	Description of counselling 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 each student

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 makes them learners for life and also enables 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.

In the Table B.9.1b below, please find the number of students undergone career counselling in the last four academic years.

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

Academic Year	Course Name	Course code	Number of students Benefited	Remarks
2014 – 15	Life Skills	SSK111	1151	B Tech 3 rd , 4 th , 5 th and 6 th semesters
		SSK112	1011	
		SSK113	983	
2015 – 16	Life Skills	SSK111	981	B Tech 3 rd , 4 th , 5 th and 6 th semesters
		SSK112	1140	
		SSK113	1141	
2016 – 17	Life Skills	15SSK221	995	B Tech 3 rd , 4 th , 5 th and 6 th semesters
		SSK112	988	
		SSK113	982	
2017 – 18	Life Skills	15SSK221	1101	B Tech 3 rd , 4 th , 5 th and 6 th semesters
		15SSK321	992	
		15SSK331	994	

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.

In the Table B.9.5c below, please find the summary of the guest lectures organized during the last four academic years.

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

Academic 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

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.

In the Table B.9.5d below, please find the summary of the certification programs conducted during the last four academic years.

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

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

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.

In Table B.9.5e below, please find the summary of the technical sessions conducted during the last four academic years for the B. Tech. students.

Table B.9.5e Technical sessions conducted during the last four academic years

Academic 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

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.

In the Table B.9.5f below, please find the summary of the special classes conducted during the last four academic years.

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

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

Academic Year	Program	Number of hours engaged	Number of students participated	External/Internal trainer
2017 - 18	Problem Solving and Coding Session	25	95	Internal (Dr. Vidhya B / Ardra P S)
	Interactive Sessions on Problem Solving and Algorithms	12		External (Prof. Pandu Rangan Chandrasekharan, IIT Madras)

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.

In the Table B.9.5g below, please find the number of students got placement internships during the last four academic years.

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

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

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. In the Table B.9.5(h) below, please find the summary of the German, French and Spanish classes during the last four academic years.

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

Academic Year	Foreign Language	Number of students Attended
2014 - 2015	German	64
	French	28
2015 - 2016	German	43
	Spanish	52
2016 - 2017	German	70
	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 a 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.

In the Table B.9.5i below, please find the summary of the competitive examination training during the last four academic years.

Table B.9.5i Competitive examination training during the last four academic years.

Academic Year	Competitive Exam training	Number of students attended
2014 - 15	GRE	33
	CAT	51
	GATE	57
2015 - 16	GRE	36
	CAT	57
	GATE	59
2016 - 17	GRE	47
	CAT	41
	GATE	53
2017 - 18	GRE	53
	CAT	51
	GATE	41

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. The following Table B.9.5j lists the mock interviews conducted during the last 4 academic years.

Table B.9.5j Mock interviews conducted during the last 4 academic years

Academic Year	Students attended Mock Interview Branch wise							
	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

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.

In the Table B.9.5k below, please find the summary of the pre placement training during the last four academic years.

Table B.9.5k Pre placement training during the last four academic years

Academic Year	Average Number of session taken 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.

In the Table B.9.5l below, please find the summary of the pre placement training during the last four academic years.

Table B.9.5l Company specific training conducted during the last four academic years

Academic Year	No. of Trainings
2015 - 16	42
2016 - 17	38
2017 - 18	86

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 7th and 8th 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 following is a summary list

Table B.9.5m MoUs with industries during the last four academic years

Academic Year	No. of MOUs Signed / Renewed
2014 - 15	18
2015 - 16	9
2016 - 17	6
2017 - 18	14

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.

In the Table B.9.5n below, please find the summary of the industry electives during the last four academic years.

Table B.9.5n Industry electives during the last four academic years

Academic Year	Industry Elective executed	Course Code	Department which offered the Electives	Number of students Completed the course
2014 - 15	IT Essentials	CSE 380	CSE	363
	Business Intelligence	CSE 457	CSE	198
2015 - 16	IT Essentials	CSE 380	CSE	223
	Big Data Analytics	CSE459	CSE	162
2016 - 17	IT Essentials	CSE 380	CSE	324
	Big Data Analytics	CSE459	CSE	106
2017 - 18	Foundations of IT	15CSE377	CSE	227
	Big Data Analytics	CSE459	CSE	285

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 the diagram below. It consists of 7 stages as described in the diagram

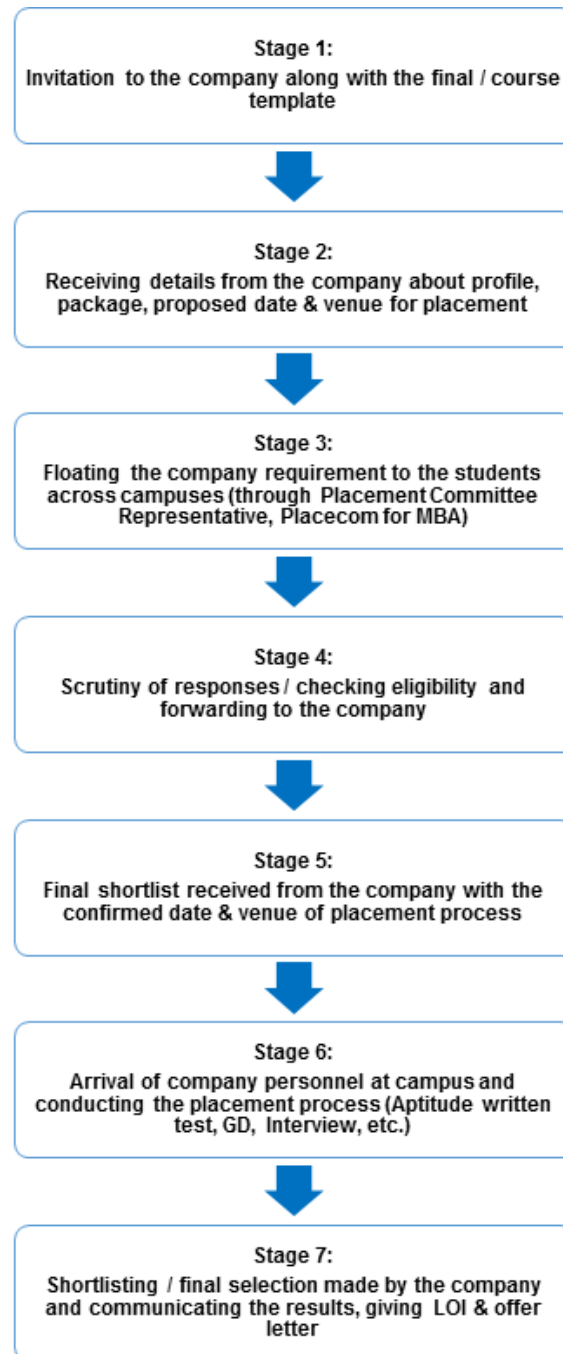


Figure B.9.5a Stages involved in the placement process

The summary of the placement statistics during the last 3 years is shown below Table B.9.5o

Table B.9.5o Placement statistics during the last 3 years

	2018 Batch			2017 Batch			2016 Batch		
	Regd. Eligible	Placed	%	Regd. Eligible	Placed	%	Regd. Eligible	Placed	%
B.Tech.									
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			94.35			97.43		
Average Salary	4.8			4.5			4.2		
No. of companies visited	108			98			89		

9.6. Entrepreneurship Cell (5)

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 two member 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)
- 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. Kuniyamuthur, CBE
R. Kumaresu, The Shake Studio , Sri Krishna College, Palakkad Main Rd., Kuniyamuthur, 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 start-up 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 product-development / 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:
 - 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 & TeamThe 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. Satheeskumar 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, Chinnampalayam, 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 (10)

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 (Annexure B 9.15a*). An annual cultural festival Amritotsavam is organized to showcase the talents of students (Annexure 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 (Annexure B 9.15 c* and 9.15d*).

9.7.1 Co-Curricular Activities

Technical workshops, guest lectures and competitions are conducted regularly by the departments through department student association. The details are furnished in Criterion 4.5

9.7.2 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"(Annexure 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 & Autoshow, 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.

9.7.3 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**(Annexure 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, 10-in-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 (Annexure B 9.16b*):
 - 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 within 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 (Annexure B 9.16 c*)

9.7.4 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.

Table B.9.7.4 Cultural Forums and Social Clubs (Annexure B 9.17a*)

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
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 Annexure B 9.17 b*
- **Participation in Association of Indian Universities (AIU)** – Annexure 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 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 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 (Annexure 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 and 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 (Annexure 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 last date of

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.9.10a Amritanidhi Scholarships - Academic Year - 2016-17

DEPT	2013-IVyr	2014-III Yr	2015-II Yr	2016 - I Yr			Dept wise
	Rs.50000	Rs.50000	Rs.50000	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

Table B.9.10b Amritanidhi Scholarships - Academic Year - 2017-18

DEPT	2014 - IVyr	2015 - III Yr	2016 -II Yr			2017—I Yr			Dept wise
	Rs.50000	Rs.50000	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.9.10c Amritanidhi Scholarships - Academic Year - 2018-19

DEPT	2015-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 Annexures (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	Governance, Institutional Support and Financial Resources	120
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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 8th in the Universities category by the National Institutional Ranking 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

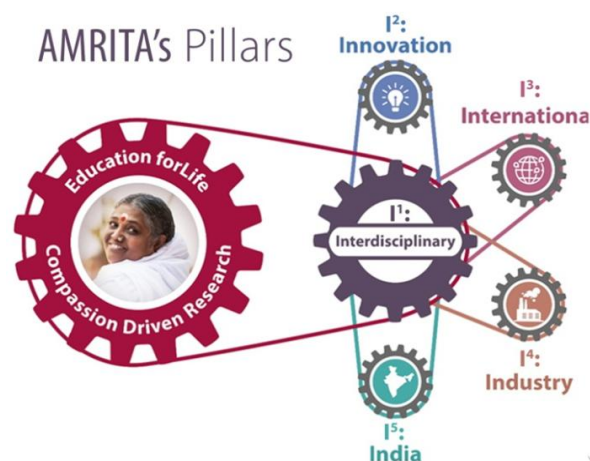


Figure 10.1.2 Institutional Strategic Plan

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
• Dr. Bipin Nair, Dean – Faculty of Sciences	Member
• Dr. Shanti Nair, Dean, Research	Member
• Dr. U. Krishnakumar, Dean - Faculty of Arts, Media & Commerce	Member
• 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

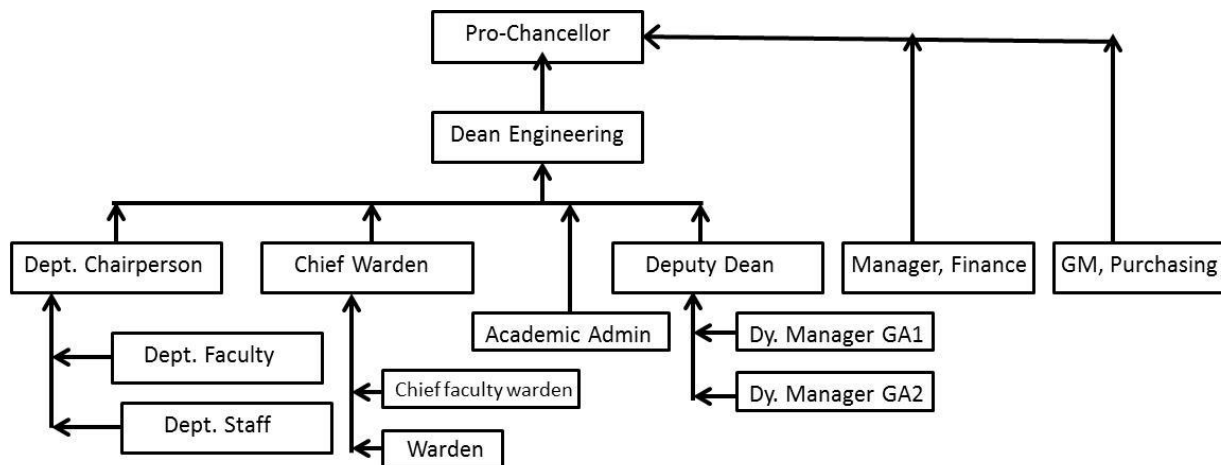


Figure 10.1.3 Organization Structure (key functions shown) of the School of Engineering, Coimbatore

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 associate professor, as well as, associate 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
CCWH	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 Ragula	Member	Mr. M.Ganesan	Member
Mr . T Rajesh Senthil Kumar	Member	Mr. N.Mohankumar	Member
Mr. A S Prakash	Member	Dr. K R M Vijaya Chandrakala	Member
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: <https://intranet.cb.amrita.edu>)
- c. Access to library digital content is also available via the campus intranet.

10.2 Budget Allocation, Utilization, and Public Accounting at Institute level (15)

Table B. 10.2a: Income and expenditure summary for CFY (2018-19: unaudited), CFYm1, CFYm2 and CFYm3.

Total Income in CFY (2018-19)			Actual expenditure in CFY (2018-19)			Total No. of students in CFY: 6003
Fee (Rs. Lakh)	Govt.	Other Sources (Specify)	Recurring including Salaries (Rs. Lakh)	Non-recurring (Rs. Lakh)	Special Projects/Any other, specify	Expenditure per student (Rs. Lakh)
13126.3			8614.6	1057.3		1.61
Total Income in CFYm1 (2017-18)			Actual expenditure in CFYm1 (2017-18)			Total No. of students in CFYm1: 5925
Fee (Rs. Lakh)	Govt.	Other Sources (Specify)	Recurring including Salaries (Rs. Lakh)	Non-recurring (Rs. Lakh)	Special Projects/Any other, specify	Expenditure per student (Rs. Lakh)
11445.0			8628.6	1298.1		1.67
Total Income in CFYm2 (2016-17)			Actual expenditure in CFYm2 (2016-17)			Total No. of students in CFYm2: 5693
Fee (Rs. Lakh)	Govt.	Other Sources (Specify)	Recurring including Salaries (Rs. Lakh)	Non-recurring (Rs. Lakh)	Special Projects/Any other, specify	Expenditure per student (Rs. Lakh)
10283.7			8040.5	1325.3		1.64
Total Income in CFYm3 (2015-16)			Actual expenditure in CFYm3 (2015-16)			Total No. of students in CFYm3: 5455
Fee (Rs. Lakh)	Govt.	Other Sources (Specify)	Recurring including Salaries (Rs. Lakh)	Non-recurring (Rs. Lakh)	Special Projects/Any other, specify	Expenditure per student (Rs. Lakh)
8997.1			7927.1	295.0		1.50

Table B. 10.2b: Details of the Institute level expense for CFY (2018-19: unaudited), CFYm1, CFYm2, and CFYm3 (all figures are in Rs. Lakhs).

Items	Budgeted in CFY	Actual expenses in CFY (2018-19)	Budgeted in CFYm1	Actual expenses in CFYm1 (2017-18)	Budgeted in CFYm2	Actual expenses in CFYm2 (2016-17)	Budgeted in CFYm3	Actual expenses in CFYm3 (2015-16)
Infrastructure Built-Up	111.5	113.4	1307.5	1306.8	1174.3	1173.9	886.9	885.2
Library	556.2	555.8	68.3	67.1	172.9	172.3	210.3	209.7
Laboratory Equipment	257.2	258.7	423.0	422.5	345.3	344.6	186.7	185.3
Laboratory consumables	39.6	40.4	41.2	40.3	25.2	23.8	103.6	104.2
Teaching and non-teaching staff salary	5261.0	5262.2	5225.4	5224.3	4944.0	4943.1	4384.0	4383.4
Maintenance and spares	509.5	508.1	355.6	354.8	494.6	493.9	415.5	418.7
R&D	170.1	168.7	133.0	131.5	133.0	132.4	153.2	154.3
Training and travel	104.2	102.0	1201.1	122.4	123.4	122.8	93.4	92.9
Miscellaneous expenses*	1126.8	1125.7	1372.3	1371.5	1112.8	1111.7	1043.5	1044.0
Others, specify**	1538.3	1536.9	886.0	885.1	846.3	847.1	743.8	744.3
Total	9674.40	9671.90	11013.40	9926.30	9371.80	9365.60	8220.90	8222.00

*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.

10.2.1. Adequacy of budget allocation

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 infrastructure, 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 Electrical and Electronics Engineering:

Table B. 10.3a: Current financial year (CFY 2018-19 unaudited), CFYm1, CFYm2 and CFYm3. All figures are in Rs. Lakhs.

Total Budget in CFY: 2018-19		Actual expenditure in CFY 2018-19		Total No. of students in CFY: 712
Non-Recurring	Recurring	Non-Recurring	Recurring	Expenditure per student
81.50	1019.5	79.37	1017.0	1.54

Total Budget in CFYm1: 2017-18		Actual expenditure in CFYm1: 2017-18		Total No. of students in CFYm1: 727
Non-Recurring	Recurring	Non-Recurring	Recurring	Expenditure per student
170.0	965.0	168.6	963.8	1.56

Total Budget in CFYm2: 2016-17		Actual expenditure in CFYm2: 2016-17		Total No. of students in CFYm2: 750
Non-Recurring	Recurring	Non-Recurring	Recurring	Expenditure per student
176.0	979.0	177.4	978.1	1.54

Total Budget in CFYm3: 2015-16		Actual expenditure in CFYm3: 2015-16		Total No. of students in CFYm3: 724
Non-Recurring	Recurring	Non-Recurring	Recurring	Expenditure per student
146.8	830.0	145.3	828.8	1.35

Table B. 10.3b: Current financial year (CFY 2018-19 unaudited), CFYm1, CFYm2 and CFYm3. All figures are in Rs. Lakhs.

Items	Budgeted in CFY	Actual expenses in CFY (2018-19)	Budgeted in CFYm1	Actual expenses in CFYm1 (2017-18)	Budgeted in CFYm2	Actual expenses in CFYm2 (2016-17)	Budgeted in CFYm3	Actual expenses in CFYm3 (2015-16)
Laboratory Equipment	3.90	3.79	14.00	13.79	37.50	37.19	4.00	3.47
Software			15.00	14.88			1.50	1.46
Laboratory consumables	4.90	4.79	5.00	4.95	3.50	3.14	14.00	13.83
Maintenance and spares	61.00	60.25	43.00	43.54	64.50	65.06	56.50	55.57
R&D	21.00	20.00	16.50	16.13	17.00	17.44	19.00	20.47
Training and travel	12.50	12.10	15.00	15.02	16.80	16.17	10.00	12.32
Miscellaneous expenses*	134.50	133.51	169.00	168.28	147.50	146.45	139.00	138.36
Total	237.80	234.44	277.50	276.59	286.80	285.45	244.00	245.48

*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 (20)

10.4.1. Quality of learning resources (hard/soft) (10)

1. Relevance of available learning resources including e- resources

E-Resources	
e-Books	16434
e-Journals	14739
Databases	14
DVD/CD	5307
Dissertations	3797
Print Resources	
Books	67235
Periodicals	265

List of Databases

S.No.	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 bandwidth 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

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

Signature and Name

Head of the Institution with seal

DR.SASANGAN RAMANATHAN
Dean (Engineering)
Amrita Vishwa Vidyapeetham
Amrita Nagar, Coimbatore - 641 112.

Annexure B.2-I

(A) Program Outcomes

Engineering Graduates will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **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.
3. **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.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **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.
11. **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.
12. **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.

(B) Program Specific Outcomes (PSOs)

PSO1: Awareness of Future Technology: Develop solutions for future systems using smart technologies.

PSO2: Research and Innovation: Identify engineering challenges, approach using cutting edge research tools and execute innovative solutions.

**Annexure B.2-II
Students Feedback**

Q.No	Questions	Options	Mark	Weightage
Q1	Knowledge of the teacher in the subject.	Excellent	17.75	17.75
		Good	14.125	
		Fair	10.2813	
		Poor	3.53125	
		Unable to Judge	8	
Q2	Clarity and understandability of teacher's explanations.	Excellent	14.5	14.5
		Good	11.8125	
		Fair	8.1125	
		Poor	2.0125	
		Unable to Judge	4.0875	
Q3	Teacher's willingness to help the students.	Excellent	7.5	7.5
		Good	5.7125	
		Fair	4.0375	
		Poor	1.125	
		Unable to Judge	2.2125	
Q4	Approximate percentage of classes not engaged by the teacher in the subject.	Less than 10%	5.85	5.85
		10% to 25%	3.6625	
		More than 25%	1.9125	
		Unable to judge	1.6375	
Q5	Whether the teacher dictates notes only without explanations?	Yes	0.67375	4
		No	4	
		Unable to Judge	1.65	
Q6	Teacher's ability to organize lectures.	Excellent	9.25	9.25
		Satisfactory	6.34125	
		Inadequate	2.5	
		Unable to Judge	3.1625	
Q7	Speed of presentation.	Just Right	4.75	4.75
		Too Fast	1.34125	
		Too Slow	1.19125	
		Unable to Judge	1.4	
Q8	Behaviour of the teacher.	Pleasant	6.75	6.75
		Indifferent	2.7825	
		Unpleasant	1.27875	
		Unable to Judge	1.9375	
Q9	Does the teacher encourage questioning?	No	0.7375	6.875
		Sometimes	3.89375	
		Yes	6.875	
		Unable to Judge	1.775	
Q10	Sincerity of the teacher.	Sincere	11.5	11.5
		Not Sincere	1.325	
		Unable to Judge	5.06375	
		Do not want to answer	4.025	
Q11	Overall teaching effectiveness	Excellent	11.25	11.25
		Good	9.025	
		Fair	6.45625	
		Poor	1.5625	
		Unable to Judge	2.025	

Annexure B.2-III

Industrial Internship/Training / Visit Feedback

Name:			
Roll No.:		Semester:	
Name & Address of the Industry/Organization/Company:			
Period of Training/Internship	From:	To:	
Title/Short description of the Industrial Training/Internship:			
Whether report has been submitted:	Yes / No		

Put ✓ mark in appropriate cells

	5	4	3	2	1
Evaluate the training/ internship programme					
Scale: 1- Poor; 2- Average; 3- Good; 4- Very Good; 5- Excellent					
Relevance of the industrial training/ internship with the curriculum					
Access to different facilities of interest - for observation, gather data and get your clarifications					
Hospitality of the industry (Food / refreshments & accommodation / willingness to help you for any problems faced during the period)					
Overall usefulness of the industrial training/ internship					

	Design	Analysis	Development	Testing	Others
Type of Exposure given					

	Yes	No
Whether any specific official was assigned for you during the training / intern?		
Whether any relevant technical literature is obtained from the Industry?		
Was the training based on a well-defined schedule and adherence to the schedule?		
Was the opportunity given to work on real time problem or practical problem?		
Do you recommend this organization for training / internship in future?		

Signature with Date

Annexure B.3-I

Indirect Attainment – PO Questions

Name :

Register No.:

1. Do you acquire enough engineering knowledge in the area of electrical and electronics engineering?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
2. Can you analyze the engineering problem and can provide solution to it?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
3. Can you design and develop solutions to real world problems using your engineering knowledge?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
4. Is it possible by you to conduct investigation of complex problems in electrical engineering?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
5. Can you use the modern tools like simulation software to provide engineering solutions?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
6. Is it possible by you to Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
7. Can you provide engineering solutions to societal, environmental and sustainable development?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
8. Is your professional ethics improved through your engineering study?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
9. Can you work in group and can provide your contribution for multidisciplinary setting?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
10. Is your oral and written communication improved because of doing UG at Amrita?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
11. Is your project management skill and handling the finance of the project improved?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
12. Will you do the learning of electrical engineering lifelong?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
13. Have you been exposed to future technologies which will provide smart solution?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree
14. Can you do research and create innovations which will provide solution to real world problems?
a. Strongly agree b. agree c. neutral d. disagree e. strongly disagree

Annexure B.3-II

Indirect Survey 2 – PO Attainment Questionnaire - Alumni

1. How would you respond to this statement. "Your Learning experience at Amrita School of Engineering was really enriching?" **[PO]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
2. I believe that the technical knowledge and skills that I gained prepared me for success in my career. **[PO1]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
3. I can apply knowledge I have through my education at Amrita to solve problems encountered in my field of work. **[PO2]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
4. I have the ability to design experiments and derive meaningful solutions. **[PO3]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
5. I have the basic skills to tackle problems of complex nature in my domain. **[PO4]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
6. I have acquired the ability to utilize the techniques, skills, modern tools and computer based technologies necessary for effectively pursuing the goals i have set in my career. **[PO5]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
7. My education helped me to render services that make people’s lives better, healthier and safer. **[PO6]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
8. My education prepared me to recognize and be aware of the social, ethical and environmental impacts of my scientific and engineering activities. **[PO7]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
9. I understand and appreciate the need for integrity and ethical decision making in my professional life. **[PO8]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
10. I have the ability to perform services requiring individual and team efforts. **[PO9]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
11. I have the ability to convey effectively in matters of written and oral forms of communication. **[PO10]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
12. I believe 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. **[PO11]**
Strongly Agree Agree Neutral Disagree Strongly Disagree
13. My education made me aware of the need for lifelong learning in my career, and the various ways in which this can be pursued. **[PO12]**
Strongly Agree Agree Neutral Disagree Strongly Disagree

Annexure B. 5 – I – Faculty Appraisal Form

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
5. Publications - Copy and paste additional rows depending on the number of publications to be entered
6. 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 per count	Category	Count	No. of Amrita faculty as co-authors	Impact Factor (IF)	Total Points	REMARK
A		TEACHING-EVALUATION ACTIVITIES					
A1	80	UG Theory course and evaluation (4 credit course)				0	Enter no. of theory courses handled under "count"
A2	60	UG Theory course and evaluation (3 credit course)				0	Enter no. of theory courses handled under "count"
A3	40	UG Theory course and evaluation (2 credit course)				0	Enter no. of theory courses handled under "count"
A4	80	PG Theory courses (4 credits)				0	Enter no. of theory courses handled under "count"
A5	60	PG Theory courses (3 credits)				0	Enter no. of theory courses handled under "count"
A6	30	Faculty in charge of lab (UG/PG)				0	Enter no. of labs the faculty is in charge of
A7	30	UG/PG Lab course (2 credits)				0	Enter no. of lab courses handled under "count"
A8	15	UG Project Guide (per batch)				0	Enter no. of UG batches under "count"
A9	15	UG Project Review committee member				0	Enter "1" if you are a member of review committee
A10	20	PG Project Guide				0	Count = No. of PG scholars being guided
A11	15	PG Project Review committee member				0	Enter "1" if you are a member of review committee
A12	25	Ph.D. Thesis Advisor (Post-comprehensive)				0	No of Ph.D. scholars in reasarch phase being guided
A13	10	Doctoral Committee member				0	Count = Member of no. of doctoral committee's
		SUB-TOTAL				0	
B		RESEARCH & CONSULTANCY ACTIVITIES					
B.1							
B.2	40	No. of Research Proposals Submitted : PI or Co-PI				0	Only final submission with Registrar approval

B.3	60	No. of extramural funded projects sanctioned (< 25 Lakhs) - PI or Co-PI			0	Applicable during the year the grant was sanctioned
B.4	90	No. of extramural funded research projects sanctioned (25 - 75 Lakhs) - PI or Co-PI			0	Applicable during the year the grant was sanctioned
B.5	150	No. of extramural funded research projects sanctioned (> 75 lakhs) - PI or Co-PI			0	Applicable during the year the grant was sanctioned
B.6	60	Extramural Research Project Execution - < Rs. 25 Lakhs (PI or Co-PI)			0	Enter no. of active projects being executed during the year of evaluation
B.7	100	Extramural Research Project Execution - > Rs. 25 Lakhs (PI or Co-PI)			0	Enter no. of active projects being executed during the year of evaluation
B.8	50	No. of peer reviewed scopus indexed publications (International Journals): IF < 1.0	2	1	0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.9	40	No. of peer reviewed scopus indexed publications (National Journals): IF < 1.0	3	1	0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.10	30	No. of scopus indexed conference proceedings publications: IF < 1.0	4	1	0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.11	70	No. of peer reviewed scopus indexed publications (International Journals): IF = 1.1 - 3.0	2		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.12	60	No. of peer reviewed scopus indexed publications (National Journals): IF = 1.1 - 3.0	2		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.13	50	No. of scopus indexed conference proceedings publications: IF 1.1 - 3.0	2		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.14	80	No. of peer reviewed scopus indexed publications (International Journals): IF = > 3.0	2		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.15	70	No. of peer reviewed scopus indexed publications (National Journals): IF = > 3.0	2		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.16	60	No. of scopus indexed conference proceedings publications: IF > 3.0	3		0	UG/PG/Ph. D. students NEED NOT be counted as co-authors.
B.17	10	No. of citations of your publications with " AMRITA Affiliation " from "scopus.com" between Jan 2017 - Dec 2017			0	Count = No. of citations with Amrita affiliation. Print out of the citations summary page from scopus.com is needed.
B.18	80	No. of Books authored/co-authored (International Publisher)			0	
B.19	60	No. of Books authored/co-authored (National Publisher)			0	
B.20	50	No. of Books chapters authored/co-authored (International Publisher)			0	
B.21	40	No. of Books chapters authored/co-authored (National Publisher)			0	
B.22	80	Patents Filed			0	
B.23	120	Patents Granted			0	
B.24	50	International Conference conducted by Amrita (Chair or Co-chair)			0	
B.25	30	International Conference conducted by Amrita (Coordinator/member)			0	
		SUB-TOTAL			0	
C		AWARDS and RECOGNITIONS				
C.1	60	Invited Speaker/Chair in an International Conference (Outside India)			0	Copy of Program schedule details required
C.2	40	Invited Speaker/Chair in an International Conference (Within India)			0	Copy of Program schedule details required
C.3	200	International recognition by an Association/Society			0	Association HQ should be outside India

C.4	100	National Recognition by an Association/Society			0	Well known & established National Association
C.5	100	Members of faculty in-charge of a team winning National level Technical/ Cultural / Sports events			0	E.g., CISCO ideate or National/State level football champions
C.6	150	Members of faculty in-charge of a team winning International level Technical/ Cultural / Sports events			0	E.g.,ICPC champions, International competition held outside India
		SUB-TOTAL			0	
D		DEPARTMENTAL ACTIVITIES				
D.1	100	Vice Chair (Dept faculty strength > 40)			0	
D.2	80	Vice Chair (Dept faculty 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 coordinator			0	NAAC is once in 4 years and IQAC every year
D.8	80	Dept Academic Coordinator (points for handling student strength of 240)			0	Count = Actual student strength handled/240
D.9	20	Course Mentor			0	Count = No. of courses as mentor
D.10	30	Course Chief Mentor			0	Count = No. of courses as chief mentor
D.11	20	Dept AUMS Coordinator			0	
D.12	30	FDP/workshop 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 Coordinator/member (per project)			0	
D.18	100	International Collaboration (Industry/Academia)			0	Project Collaboration Copy of MoU req.
D.19	60	National Collaboration (Industry/Academia)			0	Project Collaboration Copy of MoU req.
D.20	20	TAG Lead			0	Provide atleast 3 minutes of TAG meeting / Semester
D.21	50	Chairman of Amrita University BoS (UG/PG)			0	Enter 1, if chairman of either UG or PG. Enter 2, if chairman of both
D.22	30	Member of Amrita University BoS (UG/PG)			0	Enter 1, if chairman of either UG or PG. Enter 2, if chairman of both
		SUB-TOTAL			0	
E		CAMPUS/UNIV ADMINISTRATIVE 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 applicable
E.3	150	Campus Academic Coordinator			0	Enter 1 under "count", if applicable
E.4	150	Campus Dy Controller of Examination			0	Enter 1 under "count", if 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 applicable
E.8	30	Campus/School level event Coordinator (Cultural; Technical and Sports)			0	Enter total no. of events coordinated
E.9	20	Campus/School level event Member (Cultural; Technical and Sports)			0	Enter total no. of events coordinated

E.10	30	Campus Level Committee Chair (e.g., mess, hostel, disciplinary etc)			0	Count = no. of committees being chaired
E.11	30	Campus level Committee Member (e.g, mess, hostel, disciplinary, etc)			0	Count = member of no. of committees Chair is also a member
E.12	150	Univ NAAC / IQAC 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 University

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