AMRITA VISHWA VIDYAPEETHAM, AMRITA SCHOOL OF ENGINEERING

SELF ASSESSMENT REPORT(TIER - I) FOR Electronics & Communication Engg.

Part A : Institutional Information

1 Name and Address of the Institution

AMRITA VISHWA VIDYAPEETHAM, AMRITA SCHOOL OF ENGINEERING,
AMRITA SCHOOL OF ENGINEERING AMRITA NAGAR PO ETTIMADAI COIMBATORE - 641 112 TAMIL NADU

2 Name and Address of Affiliating University

3 Year of establishment of the Institution:

1994

4 Type of the Institution:

○ Institute of National Infortance	○ Autonomous
○ University	○ Any other(please specify)
◉ Deemed University	

5 Ownership Status:

○ Central Government	☑ Trust
○ State Government	☐ Society
○ Government Aided	☐ Section 25 Company
○ Self financing	☐ Any Other(Please Specify)

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

Name of Institutions	Year of Establishment	Programs of Study	Location
Amrita School of Business	1996	MBA	Coimbatore
Amrita School of Engineerir	2002	B.Tech	Kollam, Kerala
Amrita School of Engineerir	2002	M.Tech	Kollam, Kerala
Amrita School of Engineerir	2002	MCA	Kollam Kerala
Amrita School of Engineerir	2002	PhD	Kollam Kerala
Amrita School of Arts & Scie	2003	B.Com - Bachelor of Comm	Kollam Kerala
Amrita School of Arts & Scie	2003	BCA - Bachelor of Compute	Kollam, Kerala
Amrita School of Arts & Scie	2003	BBA - Bachelor of Business	Kollam, Kerala
Amrita School of Arts & Scie	2003	M.Com - Master of Commer	Kollam, Kerala
Amrita School of Arts & Scie	2003	M.Sc	Kollam, Kerala
Amrita School of Arts & Scie	2003	MSW - Master of Social Wo	Kollam, Kerala
Amrita School of Arts & Scie	2003	5 Yr.Integrated M.Sc	Kollam, Kerala
Amrita School of Arts & Scie	2003	MA	Kollam, Kerala
Amrita School of Arts & Scie	2003	5 Yr.Integrated M.A English	Kollam, Kerala
Amrita School of Arts & Scie	2003	Ph.D	Kollam, Kerala
Amrita School of Biotechnol	2005	B.Sc	Kollam, Kerala
Amrita School of Biotechnol	2005	M.Sc	Kollam, Kerala
Amrita School of Biotechnol	2005	Ph.D	Kollam, Kerala
Amrita School of Ayurveda	2004	BAMS	Kollam, Kerala
Amrita School of Ayurveda	2004	MD	Kollam, Kerala
Amrita School of Ayurveda	2004	MS	Kollam, Kerala
Amrita School of Ayurveda	2004	Ph.D	Kollam, Kerala
Amrita School of Engineerir	2002	B.Tech	Bangalore, Karnataka
Amrita School of Engineerir	2002	M.Tech	Bangalore, Karnataka
Amrita School of Engineerir	2002	Ph.D	Bangalore, Karnataka
Amrita School of Medicine	2002	MBBS	Kochi, Kerala
Amrita School of Medicine	2002	B.Sc	Kochi, Kerala

Amrita School of Medicine	2002	M.Sc	Kochi, Kerala
Amrita School of Medicine	2002	MPH - Master of Public Hea	Kochi, Kerala
Amrita School of Medicine	2002	MHA - Hospital Administrati	Kochi, Kerala
Amrita School of Medicine	2002	MD	Kochi, Kerala
Amrita School of Medicine	2002	MS	Kochi, Kerala
Amrita School of Medicine	2002	DM	Kochi, Kerala
Amrita School of Medicine	2002	MCh	Kochi, Kerala
Amrita School of Medicine	2002	PG Diploma	Kochi, Kerala
Amrita School of Medicine	2002	M.Phil	Kochi, Kerala
Amrita College of Nursing	2002	B.Sc. Nursing	Kochi, Kerala
Amrita College of Nursing	2002	M Sc Nursing	Kochi, Kerala
Amrita School of Pharmacy	1997	B.Pharm	Kochi, Kerala
Amrita School of Pharmacy	1997	Pharm.D	Kochi, Kerala
Amrita School of Pharmacy	1997	M.Pharm	Kochi, Kerala
Amrita School of Pharmacy	1997	Pharm.D(P.B)	Kochi, Kerala
Amrita School of Pharmacy	1997	Ph.D	Kochi, Kerala
Amrita School of Dentistry	2003	BDS	Kochi, Kerala
Amrita School of Dentistry	2003	MDS	Kochi, Kerala
Amrita School of Dentistry	2003	Diploma in Dental Mechanic	Kochi, Kerala
Amrita School of Dentistry	2003	Ph.D	Kochi, Kerala
Amrita School of Arts and S	2003	B.Com	Kochi, Kerala
Amrita School of Arts and S	2003	B.Sc	Kochi, Kerala
Amrita School of Arts and S	2003	BBA	Kochi, Kerala
Amrita School of Arts and S	2003	B.F.A - Photography	Kochi, Kerala
Amrita School of Arts and S	2003	MCA	Kochi, Kerala
Amrita School of Arts and S	2003	MFA	Kochi, Kerala
Amrita School of Arts and S	2003	M.Com	Kochi, Kerala
Amrita School of Arts and S	2003	MJMC - Master of Journalis	Kochi, Kerala
Amrita School of Arts and S	2003	M.Sc	Kochi, Kerala

Amrita School of Arts and S	2003	M.A	Kochi, Kerala
Amrita School of Arts and S	2003	MCA Integrated 5 Yr	Kochi, Kerala
Amrita School of Arts and S	2003	M.Sc	Kochi, Kerala
Amrita School of Arts and S	2003	M.Phil	Kochi, Kerala
Amrita School of Arts and S	2003	PhD	Kochi, Kerala
Amrita Centre for Nanoscier	2007	M.Tech	Kochi, Kerala
Amrita Centre for Nanoscier	2007	M.Sc	Kochi, Kerala
Amrita Centre for Nanoscier	2007	PhD	Kochi, Kerala
Amrita School of Arts and S	2003	BBM - Bachelor of Business	Mysore, Karnataka
Amrita School of Arts and S	2003	BCA - Bachelor of Compute	Mysore, Karnataka
Amrita School of Arts and S	2003	B.Com	Mysore, Karnataka
Amrita School of Arts and S	2003	B.Sc. Visual Media	Mysore, Karnataka
Amrita School of Arts and S	2003	BBA - Bachelor of Business	Mysore, Karnataka
Amrita School of Arts and S	2003	B.Sc. - PCM	Mysore, Karnataka
Amrita School of Arts and S	2003	MCA	Mysore, Karnataka
Amrita School of Arts and S	2003	M.Com	Mysore, Karnataka
Amrita School of Arts and S	2003	M.Sc	Mysore, Karnataka
Amrita School of Arts and S	2003	B.Ed - Bachelor of Educatic	Mysore, Karnataka
Amrita School of Arts and S	2003	Integrated 5 Year -MCA	Mysore, Karnataka
Amrita School of Arts and S	2003	Integrated 5 Year -MSc	Mysore, Karnataka
Amrita School of Arts and S	2003	B.Sc., B.Ed - PCM (Integrat	Mysore, Karnataka
Amrita School of Arts and S	2003	PhD	Mysore, Karnataka

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

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
B.Tech - Electronics and Communication Engineering	UG	1994	1994	40	Yes	180	Granted accreditation for 5 years for the period (specify period)	2002	2007	Yes	4

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
Sanctioned Intake for Last Five Years for the B.Tech - Electronics and Communication Engineering											
Academic Year					**Sanctioned Intake**						
2019-20					180						
2018-19					180						
2017-18					240						
2016-17					180						
2015-16					180						
2014-15					180						
M.Tech - VLSI Design	PG	2002	2002	18	Yes	30	Eligible but not applied	--	--	No	2
Sanctioned Intake for Last Five Years for the M.Tech - VLSI Design											
Academic Year					**Sanctioned Intake**						
2019-20					30						
2018-19					30						
2017-18					25						
2016-17					25						
2015-16					25						
2014-15					25						
M.Tech - Biomedical Engineering	PG	2007	2007	18	Yes	30	Eligible but not applied	--	--	No	2

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration
Sanctioned Intake for Last Five Years for the M.Tech - Biomedical Engineering											
Academic Year					**Sanctioned Intake**						
2019-20					30						
2018-19					30						
2017-18					18						
2016-17					18						
2015-16					18						
2014-15					18						
M.Tech – Communication Systems	PG	2019	2019	30	No	30	Not eligible for accreditation	--	--	No	2
M.Tech - Communication Engineering and Signal Processing	PG	2014	2014	24	Yes	0	Not eligible for accreditation	--	--	No	2
Sanctioned Intake for Last Five Years for the M.Tech - Communication Engineering and Signal Processing											
Academic Year					**Sanctioned Intake**						
2019-20					0						
2018-19					30						
2017-18					24						
2016-17					24						
2015-16					24						
2014-15					24						
B.Tech - Computer And Communication Engineering	UG	2019	2019	60	Yes	60	Not eligible for accreditation	--	--	No	4

Name of Program	Program Applied level	Start of year	Year of AICTE approval	Initial Intake	Intake Increase	Current Intake	Accreditation status	From	To	Program for consideration	Program for Duration

Sanctioned Intake for Last Five Years for the B.Tech - Computer And Communication Engineering

Academic Year	Sanctioned Intake
2019-20	60
2018-19	0
2017-18	0
2016-17	0
2015-16	0
2014-15	0

8 Programs to be considered for Accreditation vide this application:

S No	Level	Discipline	Program
1	Under Graduate	Engineering & Technology	Computer Science & Engg.
2	Under Graduate	Engineering & Technology	Electronics & Communication Engg.
3	Under Graduate	Engineering & Technology	Mechanical Engg.

9 Total number of employees

A. Regular* Employees (Faculty and Staff):

Items	2019-20		2018-19		2017-18	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	172	172	165	176	172	181
Faculty in Engineering (Female)	92	94	94	107	101	106
Faculty in Maths, Science & Humanities teaching in engineering program (Male)	50	50	57	57	57	57
Faculty in Maths, Science & Humanities teaching in engineering program (Female)	43	43	40	40	39	39
Non-teaching staff (Male)	276	280	290	295	289	311
Non-teaching staff (Female)	75	75	73	82	75	83

B. Contractual* Employees (Faculty and Staff):

Items	2019-20		2018-19		2017-18	
	MIN	MAX	MIN	MAX	MIN	MAX
Faculty in Engineering (Male)	8	8	7	7	8	8
Faculty in Engineering (Female)	0	0	1	1	0	0
Faculty in Maths, Science & Humanities teaching in engineering Programs (Male)	2	2	2	2	4	4
Faculty in Maths, Science & Humanities teaching in engineering Programs (Female)	1	1	1	1	1	1
Non-teaching staff (Male)	13	13	16	16	10	12
Non-teaching staff (Female)	0	0	1	2	2	3

10 Total number of Engineering students:

Engineering and Technology- UG	☑ Shift1	☐ Shift2
Engineering and Technology- PG	☑ Shift1	☐ Shift2
Engineering and Technology- Polytechnic	☐ Shift1	☐ Shift2
MBA	☐ Shift1	☐ Shift2
MCA	☐ Shift1	☐ Shift2

Engineering and Technology- UG Shift-1

Course Name	2019-20	2018-19	2017-18
Total no. of Boys	3557	3463	3397
Total no. of Girls	967	945	958
Total	**4524**	**4408**	**4355**

Engineering and Technology- PG Shift-1

Course Name	2019-20	2018-19	2017-18
Total no. of Boys	317	397	493
Total no. of Girls	180	208	276
Total	**497**	**605**	**769**

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:

Head of the Institution	
Name	Dr Sasangan Ramanathan
Designation	Dean- Engineering
Mobile No.	7598155285
Email ID	sasngan@amrita.edu

NBA Coordinator, If Designated

Name	Dr S Mahadevan
Designation	Dy Dean
Mobile No.	9944312309
Email ID	s_mahadevan@cb.amrita.edu

PART B: Criteria Summary

Critera No.	Criteria	Total Marks	Institute Marks
1	VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES	50	50.00
2	PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES	100	100.00
3	COURSE OUTCOMES AND PROGRAM OUTCOMES	175	175.00
4	STUDENTS' PERFORMANCE	100	92.22
5	FACULTY INFORMATION AND CONTRIBUTIONS	200	181.12
6	FACILITIES AND TECHNICAL SUPPORT	80	80.00
7	CONTINUOUS IMPROVEMENT	75	75.00
8	FIRST YEAR ACADEMICS	50	47.48
9	STUDENT SUPPORT SYSTEMS	50	50.00
10	GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES	120	120.00
	Total	**1000**	**970**

Part B : Criteria Summary

1 VISION, MISSION AND PROGRAM EDUCATIONAL OBJECTIVES (50)

Total Marks 50.00

1.1 State the Vision and Mission of the Department and Institute (5)

Total Marks 5.00

Institute Marks : 5.00

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	To provide a value-based learning environment for producing engineers with a blend of technical skills, moral values and leadership qualities in the field of Electronics, Communication and Computing channelized towards technological advancement to cater to the needs of the industry and the society.
Mission of the Department	

Mission No.	Mission Statements
M1	Achieving excellence in teaching and learning with an emphasis on fundamental knowledge and hands-on exposure to match the state-of-the-art in technology.
M2	Providing an environment for core competency development and enhancing quality research in emerging areas.
M3	Facilitating professional growth to the students for higher education and career in industry and academia.
M4	Imbibing the essence of human values, ethics and professional skills to sustain socio-economic development.

1.2 State the Program Educational Objectives (PEOs) (5) Total Marks 5.00

Institute Marks : 5.00

PEO No.	Program Educational Objectives Statements
PEO1	To integrate fundamental knowledge of basic science, mathematics and engineering to work on complex problems in the field of electronics and communication engineering.
PEO2	To promote independent research and continuous learning by providing hands-on exposure in electronics, signal processing and communication domains
PEO3	To provide a platform to explore and pursue interests in diversified fields for a successful career.
PEO4	To nurture team spirit and leadership qualities with a sense of social responsibility and produce engineers with an ability to integrate engineering and society.

1.3 Indicate where the Vision, Mission and PEOs are published and disseminated among stakeholders (15) Total Marks 15.00

Institute Marks : 15.00

The Mission and Vision are published/ disseminated at

- Department website (https://www.amrita.edu/school/engineering/coimbatore/electronics-and-communication)
- Chairperson Cabin
- Department Conference Hall
- Department Library
- Department Notice Board
- Faculty Rooms
- Department Laboratories
- Lab Manual
- Curriculum Book
- Student orientation programmes

The PEOs are published/ disseminated at

- Chairperson cabin
- Department Laboratories
- Website
- Curriculum Book

The student, faculty and parents are made aware of the vision, mission and program educational objectives through website, curriculum booklet and display boards at prominent locations in the department. The industry experts and alumni are informed through website.

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

Total Marks 15.00

Institute Marks : 15.00

1. The department vision and mission is framed considering the vision and mission of the institute by department academic advisory committee. (DAAC)
2. Key aspects such as value based education, social responsibility, holistic development and empowerment of knowledge, and feedback from stakeholders are considered.
3. Measures to implement the key aspects through curriculum development, teaching-learning, nurturing research environment and social outreach programmes are ensured.

Figs 1.1 and 1.2 depict the process adopted in framing the *vision and mission* and *PEOs* respectively.

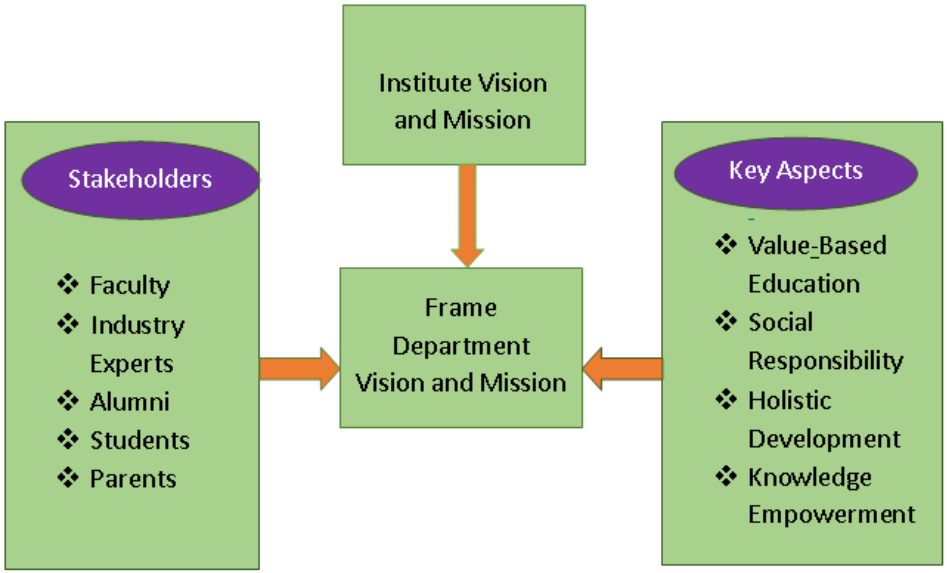


Fig 1.1 Process for framing vision and mission of the department

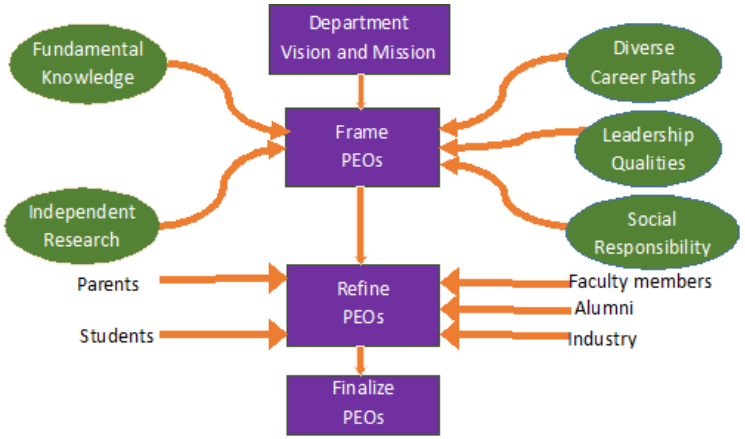


Fig 1.2 Process of framing PEOs of B.Tech Electronics and Communication Engineering

1.5 Establish consistency of PEOs with Mission of the Department (10) Total Marks 10.00

Institute Marks : 10.00

Justification:

- PEO 1 emphasizes mainly on the teaching learning process that enables students to become competent electronics and communication engineers paving the way for a successful career both in industry and academia.
- PEO 2 is focused on providing avenues for bringing out the latent research potential that is made possible with an effective teaching learning methodology.
- PEO 3 aims at preparing the students for a successful career by providing core subject knowledge and a research outlook.
- PEO 4 is intended to develop inter-personal skills and promote a sense of work ethics to mould students towards contributing effectively to societal development

PEO Statements	M1	M2	M3	M4
To integrate fundamental knowledge of basic science, mathematics and engineering to work on complex problems in the field of electronics and communication engineering.	3	2	2	-
To promote independent research and continuous learning by providing hands-on exposure in electronics, signal processing and communication domains	2	3	2	-
To provide a platform to explore and pursue interests in diversified fields for a successful career.	2	2	3	2
To nurture team spirit and leadership qualities with a sense of social responsibility and produce engineers with an ability to integrate engineering and society.	-	2	2	3

2 PROGRAM CURRICULUM AND TEACHING - LEARNING PROCESSES (100)

Total Marks 100.00

2.1 Program Curriculum (30)

Total Marks 30.00

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

Institute Marks : 10.00

The curriculum for B.Tech Electronics and Communication Engineering maintains a balance between various knowledge segments, viz., Humanities, Science (including Mathematics), Engineering knowledge (General, Core and Elective) and Project. It is updated once in every four years by the Board of Studies (BoS), which includes experts from within the institute, reputed national institutions and from leading industries. Draft curriculum and syllabi along with proposed modifications in Program Articulation Matrix, POs and PSOs is formulated by the Program Committee. Necessary feedback and suggestions from various stake holders like Faculty, Alumni, Industries and parents are taken into consideration for restructuring the curriculum. The updated curriculum is presented to the BoS for discussions. This is an iterative process wherein the curriculum undergoes several rounds of modifications. The modified curriculum is implemented after ratification by the academic council.

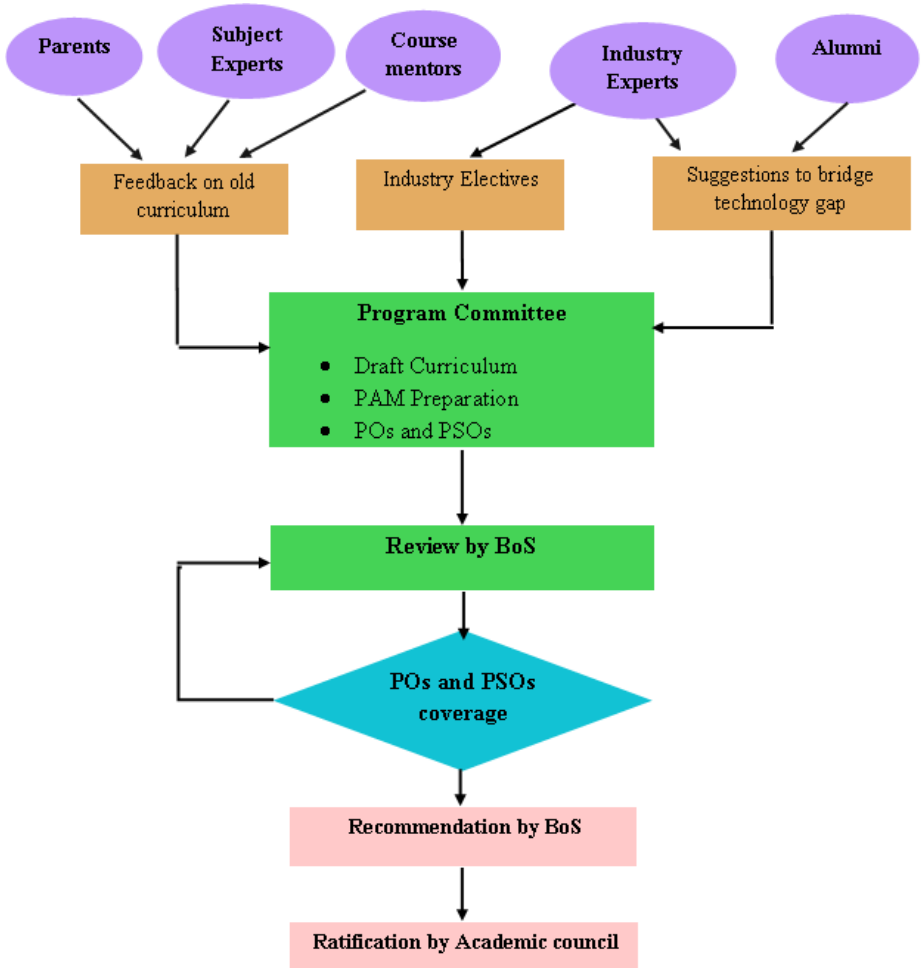


Fig. 2.1.1. Process for designing the Curriculum

2.1.3 State the components of the curriculum (5)

Institute Marks : 5.00

Course Components	Curriculum Content (% of total number of credits of the program)	Total number of contact hours	Total number of credits
Basic Sciences	15	27.00	25
Engineering Sciences	10.2	22.00	17
Humanities and Social Scie	13.2	26.00	22
Program Core	44.2	86.00	74
Program Electives	5.4	15.00	15
Open Electives	0	0.00	0
Project(s)	7.2	24.00	12
Internships/Seminars	0	0.00	0
Any other (Please specify)	1.2	4.00	2
Total number of Credits			**167**

2.1.4 State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes as mentioned in Annexure I (10)

Institute Marks : 10.00

The Program Committee prepares a draft curriculum. BoS reviews this Curriculum and provides necessary suggestions in courses for improving PO and PSO coverage if needed. Then each course COs are mapped to POs and PSOs. The Program Articulation matrix thus formed is resubmitted for approval or recommendations by BoS. This is an iterative process which ensures the compliance of curriculum for POs and PSOs attainment.

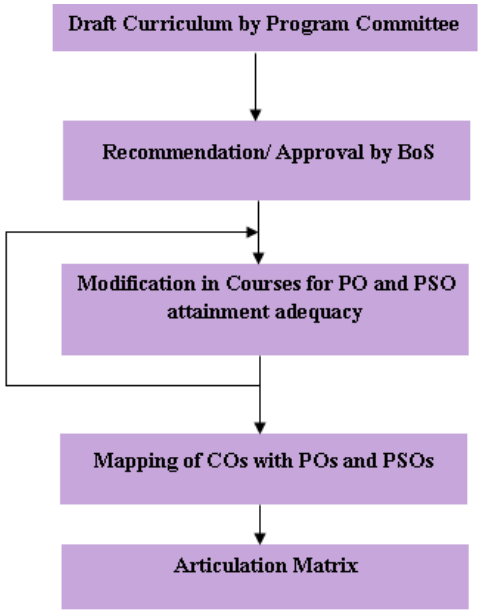
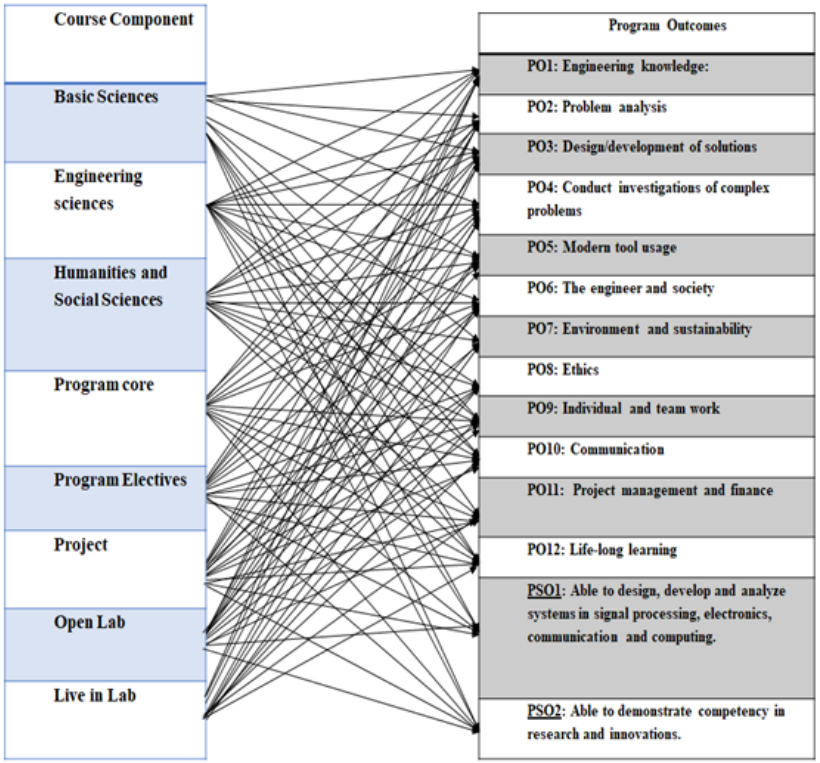


Fig. 2.1.4.A. Extent of compliance of the curriculum



Course Component	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
Basic Sciences	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓	✓
Engineering sciences	✓	✓	✓	✓	✓	✓		✓	✓	✓		✓	✓	✓
Humanities and Social Sciences	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Program core	✓	✓	✓	✓	✓	✓			✓	✓	✓	✓	✓	✓
Program Electives	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓
Project	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Open Lab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Live in Lab	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		

Fig: 2.1.4.B. Mapping of courses to POs

2.2 Teaching-Learning Processes (70) Total Marks 70.00

2.2.1 Describe Processes followed to improve quality of Teaching & Learning (15) Institute Marks : 15.00

A. Adherence to Academic Calendar

In the beginning of every academic year, the academic calendar is framed and issued to the faculty members, staff, students and also made available in the campus intranet and mobile app.

An academic calendar called handbook is framed based on the discussions with the Dean Engineering, Deputy Dean Engineering, Controller of Examinations, Department Heads and administrative authorities. The calendar is printed and handed over to the students at the beginning of the academic year and is also made available in the campus intranet for better visibility and accessibility.

The calendar provides information about the Vision, Mission, Engineering Programmes - Undergraduate, Postgraduate programmes, Departments with Faculty information, Central Library. The calendar lists the details of amenities and Research centers available to students. Rules and regulations pertaining to the hostel, library, classrooms and other areas within the campus are enlisted.

The academic schedule provides

- Date of commencement of the academic session
- Duration of semester
- Commencement of Periodical tests
- Last working day
- Commencement of end semester examinations
- Date of reopening of the forthcoming semester etc
- Schedule of major events
- Holidays

B.Pedagogical initiatives

- Course delivery initiated by conduct ofCourse Committee Meeting: Course mentor with Course instructors discuss and form the Course Plan and Lecture Plan
- Campus intranethosts Video lectures, E-databases, E-Journals and Dspace
- Student workshop and term project are conducted to enable students understand and relate the state of the art in research and technology.
- Conceptual learning through conduct of quiz, tutorial, seminar and term-work.

C. Methodologies to support weak students and encourage bright students

Conduct of class committee meeting and action taken.

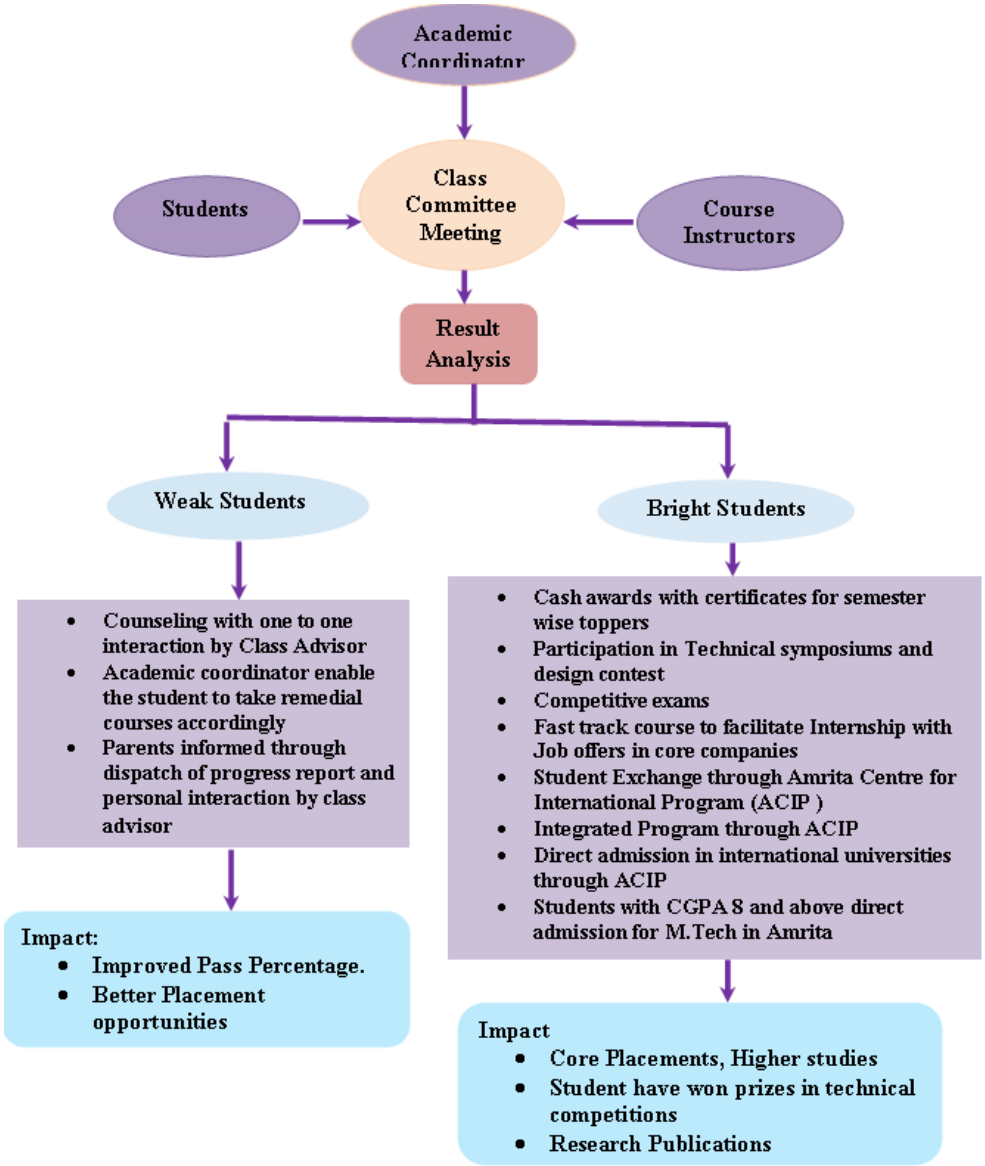


Fig. 2.2.1.A. Process for identifying weak and bright students

Remedial Meassures

To facilitate weak students complete the course backlogs following remedial measures are provided.

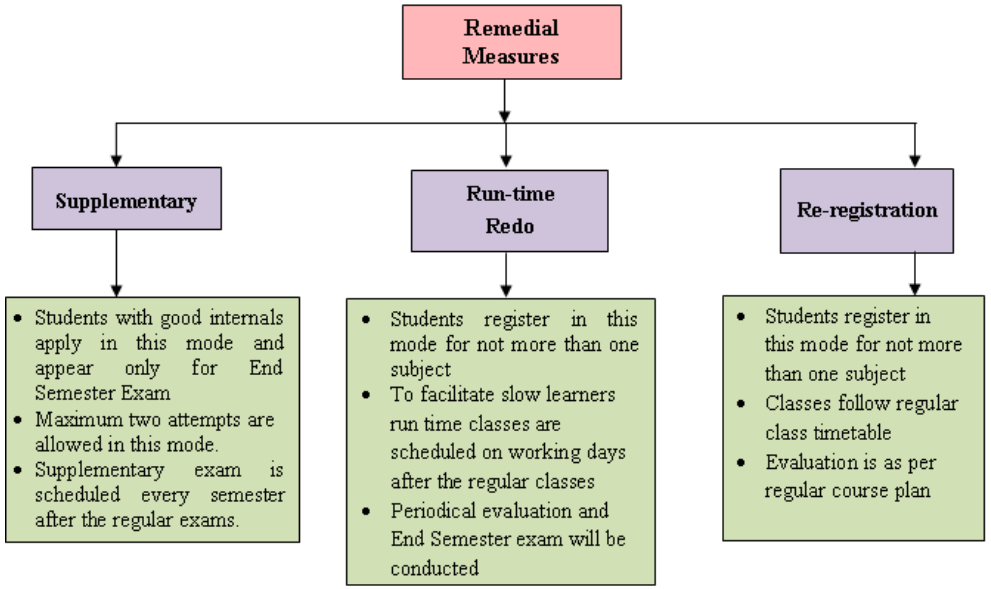


Fig. 2.2.1.B Remedial measures for weak students

D. Quality of classroom teaching (Observation in a Class)

Every class room consistsofChalk& Board, Projector and Screen for effective course delivery. Some of the class rooms are augmented with audio visual facilities enabling interactive classes. Faculty cabins are in the vicinity of the class rooms, which encourages outside class interactions with the faculty. Participative learning is also adopted to keep the students involved. Some of the components are,

- Quiz
- Seminar
- Term work
- Tutorial
- Study materials and Assignments through Amrita University Management System (AUMS)
- E-Learning for selected courses through A-View

E. Conduct of experiments (Observation in Lab)

- Course committee meeting is conducted to identify
  - List of experiments
  - Lab manual preparation
  - Evaluation pattern
- Dissemination of the above to the students
- Dedicated Lab session for familiarization of tools/equipment.
- Experiments are carried out in groups/individual under supervision.
- Term project as a part of lab curriculum as applicable.

F. Continuous Assessment in the laboratory

The following components are considered for continuous assessment in the laboratory

- Preparation
- Experiment

- Output
- Record
- Viva
- Periodical test

G. Student feedback of teaching learning process and actions taken

Periodical online feedback is taken twice in a semester during a prescribed time window which is communicated to the students well in advance through class advisors. The online feedback form is available to students through AUMS login and as a mobile application. The final feedback report is generated and made available to respectivefaculty. Corrective measures are taken based on one to one interaction with faculty, students and class advisor.

Sample Questions:

- Knowledge of the teacher in the subject.
- Clarity and understandability of teachers explanations.
- Teachers willingness to help the students
- Approximate percentage of classes engaged by the teacher in the subject
- Does the teacher encourage questioning?

2.2.2 Quality of end semester examination, internal semester question papers, assignments and evaluation (15) Institute Marks : 15.00

A. Process for internal semester question paper setting and evaluation and effective process

Implementation

At the beginning of every semester a course committee is constituted which includes all the faculty members handling a particular course. The course committee plays the major role in setting the questions for Internal Assessment and End Semester Exam. The final question paper is handed over to the Office of Deputy Controller of Examination after an iterative process to ensure appropriate CO-PO coverage and syllabus coverage. Round-Robin method of evaluation is followed for courses offered to more than one class.

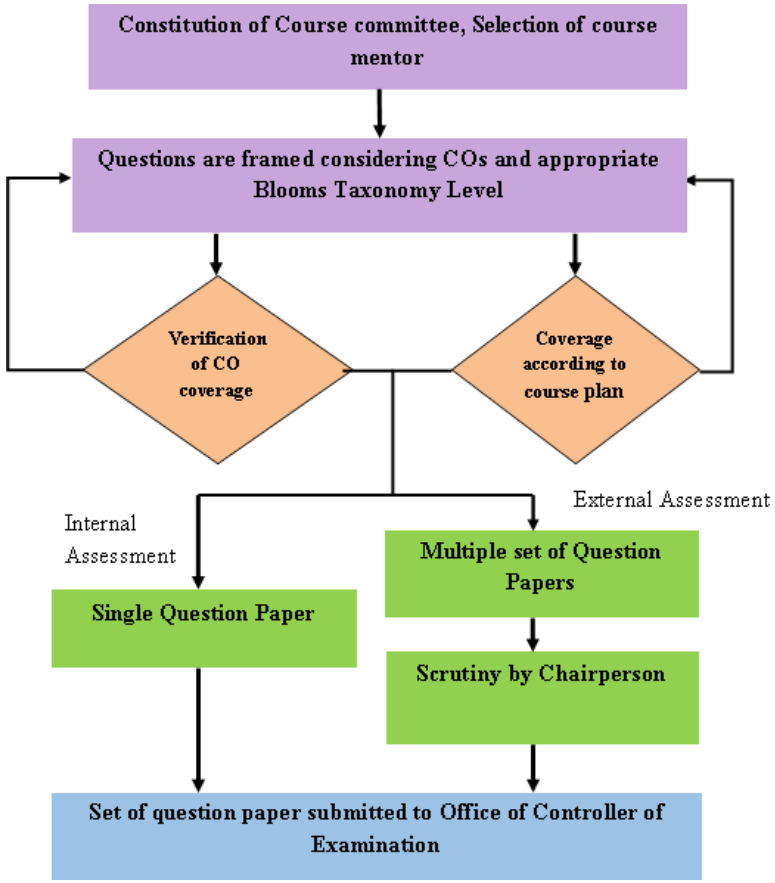


Fig 2.2.2 Process for internal semester question paper setting

B. Process to ensure questions from outcomes/learning levels perspective

The questions for Internal and End Semester evaluation are chosen such that it covers the relevant COs. Each question is mapped to one or more COs and difficulty level of the questions is determined. Course committee fixes the overall difficulty level of the question paper such that there is a fair distribution among the Bloom's Taxonomy levels namely:

- Remember
- Understand
- Apply
- Analyze
- Evaluate
- Create

This process helps the teacher to analyze the level of understanding and outcome attainment of the students after each assessment.

C. Evidence of COs coverage in class test/midterm tests:

The following table gives the CO-PO mapping for the course 15ECE204 Signal Processing-1

Evaluation Component	COs

Periodical 1	CO1, CO3,CO4
Periodical 2	CO1, CO2
Quiz/Tutorial	CO1, CO2, CO3, CO4
Assignment	CO1, CO2, CO3, CO4

Evaluations

- Tutorials and quizzes are evaluated in stipulated time
- Online tests are conducted for fair evaluation
- Evaluation of periodicals is conducted within one week after the exams.
- Reports are generated and evaluated for the analysis of attainment of POs and COs.

Evaluation outcome

- Know how to apply fundamental knowledge of mathematics and science to complex engineering problems
- Help to identify, formulate and analyze complex engineering problems
- Gain skills to create and apply appropriate techniques,resources,modern engineering and IT tools
- Communicate effectively on complex engineering activities such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions
- Develop technical competency to design and comprehend solutions

Action plan

Based on the performance and attainment level course committee takes corrective measures for the subsequent semesters like:

- Inclusion of more practice problems
- Suggesting addition of some fundamental topics or advanced topics on the subject as needed to the subsequent BoS.
- Reframing COs if required.

D. Quality of Assignment and its relevance to COs

All the continuous Assessment components including assignments are fixed and mapped to respective COs during the initial course committee meeting itself. Depending on the course requirement different types of assignments are given to students. For example:

- Mathematical derivations which help the students in analyzing the basic concept
- Through simulation assignments students learn advanced tools which encourages self-learning.
- Assignments pertaining to recent developments and applications related to the course needs extensive survey from multiple sources.

Students are encouraged to submit assignments online which helps in immediate evaluation and feedback.

2.2.3 Quality of student projects (20) Institute Marks : 20.00

A.Identification of projects and allocation methodology to Faculty Members

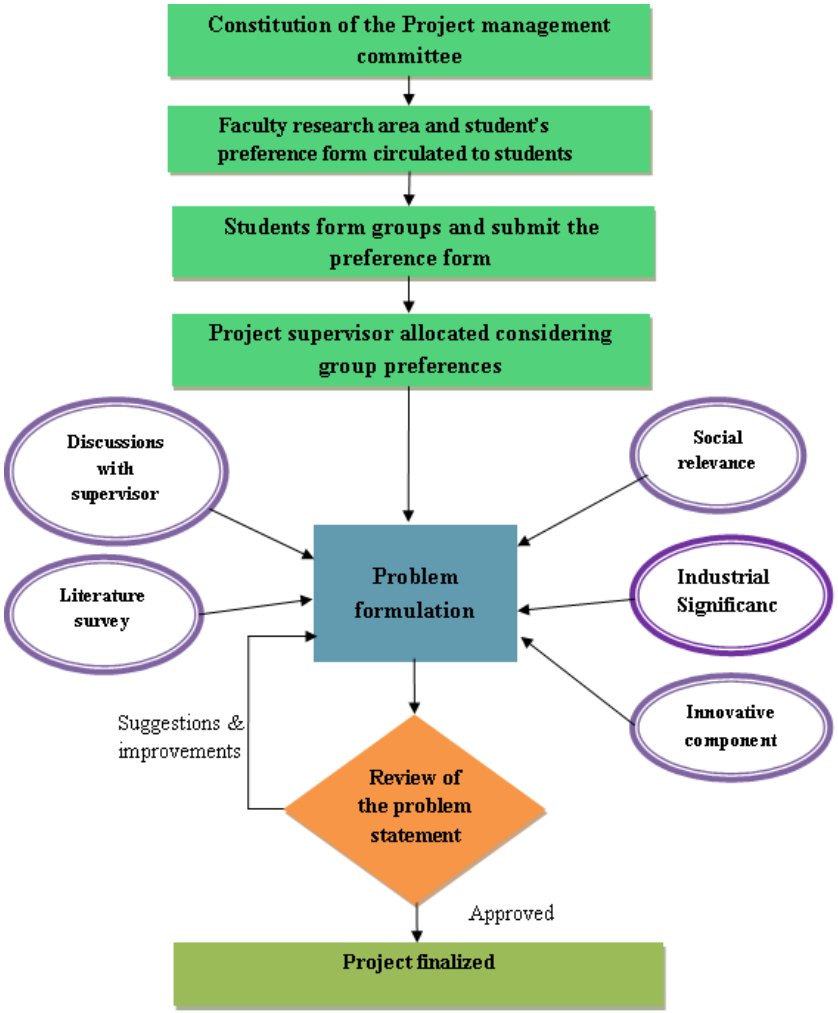


Fig. 2.2.3.A. Identification of projects and allocation methodology to Faculty Members

2.2.3.B. Types and relevance of the projects and their contribution towards attainment of POs and PSOs

Sl. No.	Title of the project	Faculty Supervisor	POs& PSOs	Classification

1	Modeling of CNIFET using compact virtual source model and simulation of its characteristics.	Dr. B. Bala Tripura Sundari	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
2	Analysis and classification of EEG and ECG analysis using non linear techniques	Dr. B. Karthi	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
3	An efficient diagnosis pattern generation procedure to distinquish stuck-at faults and bridging faults.	Ms. Navya Mohan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
4	Providing data collection services using UAVs	Dr. Manoj Kumar Panda	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
5	Implementation of a dual polarization radar using software defined radar	Dr. R. Gandhiraj	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
6	Capacity analysis of MIMO based land mobile satellite system in sparse multipath.	Dr. S. Kirthiga	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
7	FDTD Analysis of Multi-layered structures for Quality Estimation	Mr. B. Sabarish Narayanan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
8	Design of an active microstrip sensor for moisture detection	Mr. B. Sabarish Narayanan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
9	Electricity generation from unused human energy using piezoelectric element	Ms. J. RolantGini	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application

10	Diagnosis aware testing of multiple stuck at faults using ZBDD	Dr. B. Bala Tripura Sundari	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
11	Performance optimization of MicrostripBandpass filter for WLAN applications	Dr. S. Natarajamani	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
12	Design of wide band power divider with good isolation and high selectivity.	Dr. S. Natarajamani	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
13	Fractal based defected ground structure for microstrip path antenna	Ms. V. Mekaladevi	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
14	Remote Access Health Monitoring System	Dr. C. Santhosh Kumar	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
15	Smart Irrigation Alert Systems	Dr. Manoj Kumar Panda	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
16	Denoising BCG signals using Multi Resolution Analysis	Mr. Ganesan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
16	Fault Detection in satellite power systems using machine learning	Dr. R. Lavanya	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
18	Spectrum sensing in Cognitive Radio	Dr. S. Krithiga	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
19	PF for nonlinear GaussionStocastic wireless systems	Mr. P. Sudheesh	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research

20	Channel coding scheme for 5G	Dr. B. Yamuna	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
21	Logical obfuscation of digital circuits for improved security	Mr. Mohankumar	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
22	Highly efficient stocastic computing for character recognition using neural networks	Dr. B. BalaTirupuraSundari	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
23	Localization and path planning of autonomous mobile robot.	Mr. S. Adarsh	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
24	ECG system as a smart phone peripheral	Ms. N. Kayalvizhi	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
25	Heart rate measurement using accelerometer probe	Ms. N. Kayalvizhi	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
26	Wireless device to detect blood volume changes	Mr. M. Ganesan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
27	Sensor based grip strength monitoring system for stroke rehabilitation	Dr. T. Rajagopalan	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
28	Electrically assisted waste segregation	Dr. D.S. HarishRam	PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
29	High frequency trading algorithms in V2I and V2V communications and controls	Dr.G.A. ShanmughaSundaram	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research

30	Automated water dispensing and monitoring system	Mr. K.P.Peeyush	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
31	Unscented Particle Filter for Channel Estimation of OFDM Communication Systems	Mr. P. Sudheesh	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
32	Improved Modified Weighted Bit Flipping Algorithm for LDPC Codes	Mr. K. Pargunarajan	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
33	Compact Dual Band Fractal Antenna for Wireless Applications	Ms. V. Mekaladevi	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
34	Circuit Modelling of a Terahertz Absorber	Dr. Binoy B Nair	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
35	Improvised Power Line Classification Method by Merging the Selective Features of pre-trained CNN.	Ms. G. Suguna	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
36	Smart Driver Assistance System using Raspberry Pi and sensor works	Mr. E. Prabhu	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
37	Advanced Driver Assistance System	Ms. R. Karthika	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application
38	Low Power Binary Square Rooter using Reversible Logic	Mr. S. R. Ramesh	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
39	Toggle Count Based Logic Obfuscation to Enhance Hardware Security	Ms. M. Priyatharishini	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research

40	Fault Diagnosis Using Automatic Test Pattern Generation & Test Power Reduction for VLSI Circuits	Dr. J. P. Anita	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
41	Implementation of Digital Lattice Filter using Schur Polynomial	Dr. B. Bala Tripura Sundari	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Research
42	Portable device for precision Farming	Mr. C. B. Rajesh	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
43	Robust Smart Home Monitoring System Based on 802.11 Mesh Network	Mr. E. Prabhu	PO1, PO2, PO3, PO4, PO5, PO6, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Product
44	Data Logging Through Independent IoT Platform	Dr. R. Gandhiraj	PO1, PO2, PO3, PO4, PO5, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	Application

C. **Projects related to Industry**

Sl No.	Name of Student	Title of Project	Industry
1	AdithyaBharadwaj U	Account Intelligence	Latentview Analytics
2	Aparna P	Extended Simulation for Automatic Test Execution and Evaluation	Robert Bosch Engineering and Business Solutions Ltd.
3	Chandrashekar Krishnan	Establishment and Testing in Software in Loop Environment for Electronic Stability Program Software	Robert Bosch Engineering and Business Solutions Ltd.
4	Ikram Shah V	Portals Admin-Company & User Administration	GE Aviation (GE India Industrial Pvt. Ltd.)
5	Raghu Nathan S	Developing Lazy Maestro V2	Cisco
6	SooryaaVignesh T	Software in Loop Testing for a Module Using CAN Communication Protocol in Engine Control Unit (ECU)	Robert Bosch Engineering and Business Solutions Ltd.

7	RakshitaVishali V	Automation of CAN Mapping Sheet	Robert Bosch Engineering and Business Solutions Ltd.
8	AakashNandakumar	Automatic Skill-Based Round Robin Ticketing System	Fresh works
9	B A MoneshKarthikkeyan	Testing of Engine Management Control Unit Using ECU-Test	Robert Bosch Engineering and Business Solutions
10	ParthoSarothiDey	Testing of Engine Management Control Unit Using ECU-Test	Robert Bosch Engineering and Business Solutions
11	Mukund S Chettiar	Reinforcement of E-Learning using Adaptive Learning and Open Content Creation	Soliton Technologies
12	Prahannathan V	One Click Deployment	Soliton Technologies
13	K. Saravanan	Supply Voltage Based EPS Assistance Reduction	Robert Bosch Engineering and Business Solutions
14	ShivaranjanMenon K	Dynamic Test Automation Interface using Perl	Robert Bosch Engineering and Business Solutions
15	Avinash J	Customer Care & Billing Market Transaction	Oracle
16	Madhumitha S	Quality Assurance Score Cards Using Speech Analytics	Bridgei2i
17	Pavanitha J	Automatic Skill-Based Round Robin Ticketing System	Freshworks
18	Swathika S	Installation of Oracle Utilities Meter Solution Cloud Service in Cloud Like Environment.	Oracle
19	Loyola Samraj S	Firewall Rule Optimizer	Cisco
20	Nisha V Bhalke	Implementation of Global Discovery Server.	Honeywell
21	Vedhanarayanan M	Airbag Benchtop Simulator	Continental AG

2.2.3.D.Process for monitoring and evaluation

Project management committee is constituted with chairperson and class advisors. The committee initiates the process of project allocation at the beginning of seventh semester. Students are asked to form groups of four members. Forms are circulated to collect the list of groups. Then faculty names are circulated among students along with their domain of research. Students are asked to submit the preference list of faculty supervisors.

PMC convenes meeting and make decisions on the allocation of project supervisor. Students are encouraged to take up socially relevant projects or projects with national importance. Students are asked to interact with faculty advisor and formulate the problem for the project. Students present their idea before the committee. The committee checks the relevance and feasibility of project and takes decision. If the project is not approved, then students are asked to change or reframe the problem.

Table 2.2.3.D. Project evaluation Components

Semester	Review No.	Weightage(%)	Remarks
VII	Review 7.0	Nil	Accept/Reject
	Review 7.1	60	Internal
	Review 7.2	40	External
VIII	Review 8.1	15	Internal
	Review 8.2	20	Internal
	Review 8.3	25	Final Internal
	Review 8.4	40	External

Evaluation

The project is fixed during the seventh semester. A log book is issued to all batches of students. It contains the students ‘information and details regarding the progress of the project. Log book ensures planning, clarity and fairness in evaluation. Two reviews (review 0.1 and 0.2) are conducted during the seventh semester. No mark is awarded during the seventh semester, only progress is evaluated. During eighth semester two reviews (review1&2) are conducted. Panel of members are allocated according to the domain of the project. The individual and group performances are evaluated by the panel. The components of evaluation are provided in the table. At the end of eighth semester the Project Management Committeeconvenes the meeting to prepare and finalize the industry experts for external review. The schedule for external review is finalized and circulated. Industry experts for different project domains are intimated. The format for preparing project report is circulated. Students are asked to submit the project report in compliance with the format circulated. The report should also undergo plagiarism check before submission. Students are encouraged to do hardware implementation, and 20% of the total mark is allocated for this. Students are also encouraged to submit their research work to Scopus indexed conferences and journals.

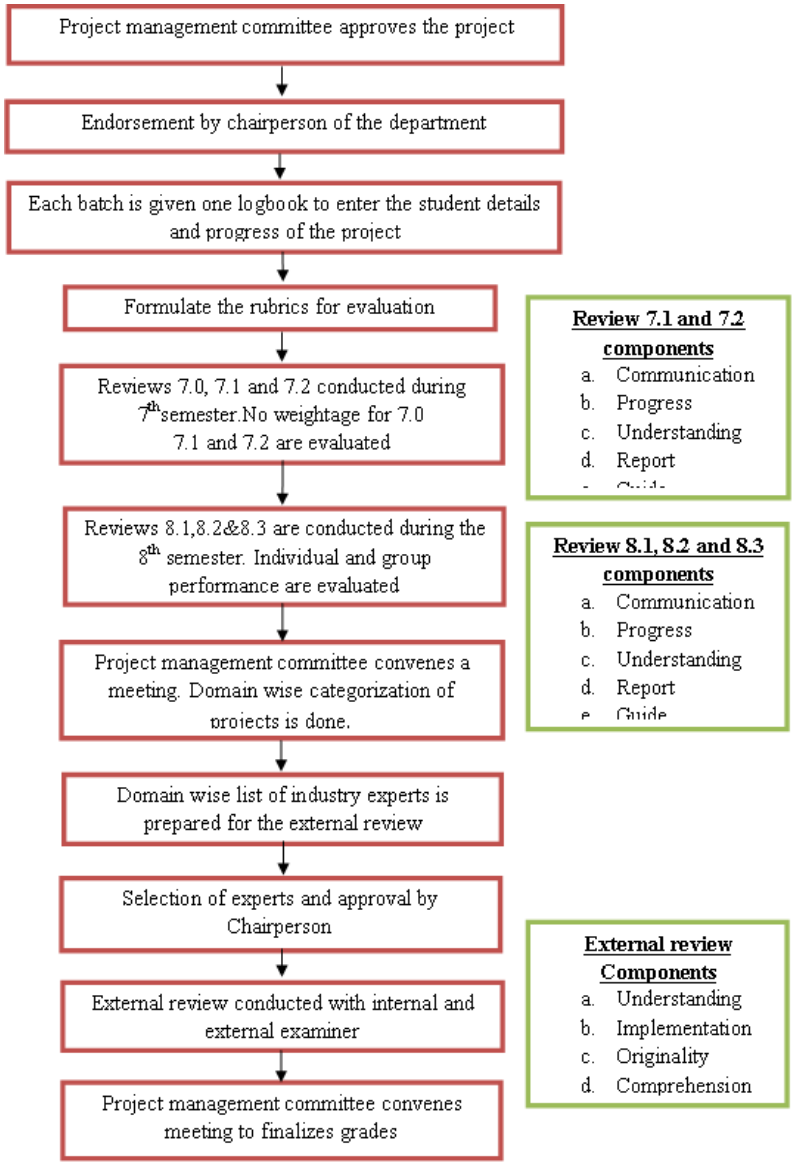


Fig.2.2.3 D.Process for monitoring and evaluation

E.Process to assess individual and team performance

Internal Review evaluation Format

Roll Number		Student 1	Student 2	Student 3	Student 4	Student 5
Communication	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Progress	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Understanding	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Report	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Guide	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Total						

Final external Review Format

Roll Number à		Student 1	Student 2	Student 3	Student 4	Student 5
Communication	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Implementation	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Originality	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Comprehension	Excellent (5)					
	Good (3)					
	Average (2)					
	Poor (1)					
Total						

Roll No.	External Review (25)	Report (15)	Total (40)

F. Quality of completed projects/working prototypes

Demonstrable projects

S. No.	Project	Faculty supervisor
1	Performance optimization of MicrostripBandpass filter for WLAN applications	Dr. S. Natarajamani
2	Fractal based defected ground structure for microstrip path antenna	Ms. V. Mekaladevi
3	Heart rate measurement using accelerometer probe	Ms. N. Kayalvizhi
4	Wireless device to detect blood volume changes	Mr. M. Ganesan
5	Compact Dual Band Fractal Antenna for Wireless Applications	Ms. V. Mekaladevi
6	Portable device for precision Farming	Mr. C. B. Rajesh
7	Robust Smart Home Monitoring System Based on 802.11 Mesh Network	Mr. E. Prabhu
8	Danger Area Alert System*	Dr. Manoj Kumar Panda, Mr. Sabarish Narayanan B
9	Smart Garment Tracking System (won Smart India Hackathon SIH - 2019, Hardware edition)*	Dr. Manoj Kumar Panda, Mr. Sabarish Narayanan B

***** Demonstrated at National Science and Technology Fair organized by Codissia, Coimbatore, August 29 – 31, 2019.

G. Evidences of papers published /Awards received by projects etc.

Sl. No.	Project Name	Title of publication	Conference/Journal	Organizer/ Publisher
1	Wireless device to detect blood volume changes	A wearable device to detect blood volume changes	5th International conference on advanced computing and communication systems (ICACCS19)	IEEE
2	Denoising BCG signals using Multi Resolution Analysis	Denoising of BCG signal using multi resolution analysis	5th International conference on advanced computing and communication systems (ICACCS19)	IEEE

3	Low Power Binary Square Rooter using Reversible Logic	A low power binary square rooter using reversible logic	5th International conference on advanced computing and communication systems (ICACCS19)	IEEE
4	Spectrum sensing in Cognitive Radio	Spectrum sensing using sparse Bayesian learning	International Conference on communication and signal processing (ICCSP 2019)	IEEE
5	A Unscented Particle Filter for Channel Estimation of OFDM Communication Systems	Channel estimation for high speed wireless systems using Gaussian Particle Filter and Auxiliary Particle Filter	International Conference on communication and signal processing (ICCSP 2019)	IEEE
6	Fault Diagnosis Using Automatic Test Pattern Generation & Test Power Reduction for VLSI Circuits	Fault diagnosis using automatic test pattern generation and test power reduction technique for VLSI circuits	International conference on trends in electronics and informatics (ICOEI 2019)	IEEE
7	Fault Detection in satellite power systems using machine learning	Multivariative time-series classification for automated fault detection in satellite power systems	International Conference on communication and signal processing (ICCSP 2019)	IEEE
8	Capacity analysis of MIMO based land mobile satellite system in sparse multipath.	Parameter estimation and prediction using rotational invariant techniques in MIMO system using USRP	International Conference on communication and signal processing (ICCSP 2019)	IEEE
9	Toggle Count Based Logic Obfuscation to Enhance Hardware Security	Toggle count based logic obfuscation	International conference on trends in electronics and informatics (ICOEI 2019)	IEEE

10	Automated water dispensing and monitoring system	Automated water dispensing and monitoring system	International conference on advances in electrical and computer technologies (ICAECT 2019)	Springer
11	Advanced Driver Assistance System	Advanced driver assistance system using computer vision and IOT	ISMAC - CVB 2019 (Intl Conf)	Springer - Lecture notes in computational vision and biomechanics
12	Improvised Power Line Classification Method by Merging the Selective Features of pre-trained CNN.	Improvised powerline classification method by merging the selective features of pre-trained CNN	ISMAC - CVB 2019 (Intl Conf)	Springer - Lecture notes in computational vision and biomechanics
13	Electrically assisted waste segregation	Electronically assisted automatic waste segregation	International conference on trends in electronics and informatics (ICOEI 2019)	IEEE Explore
14	Unscented Particle Filter for Channel Estimation of OFDM Communication Systems	Unscented particle filter for channel estimation of OFDM communication systems	International conference on trends in electronics and informatics (ICOEI 2019)	IEEE Explore
15	Logical obfuscation of digital circuits for improved security	Lightweight logic obfuscation of combinational circuits for improved security - An analysis	International conference on Inventive communication and computational technologies 2019	Springer - Lecture Notes in Network and systems
16	An efficient diagnosis pattern generation procedure to distinguish stuck-at faults and bridging faults.	A diagnosis pattern generation procedure to distinguish between stuck-at and bridging faults	International conference on intelligent computing and control systems (ICICCS 2019)	IEEE

17	Implementation of a dual polarization radar using software defined radar	Simulation of dual-polarization radar for rainfall parameter and drop size distribution estimation	International conference on intelligent computing and control systems (ICICCS 2019)	Springer - Lecture notes in electrical engineering (LNEE)
18	Compact Dual Band Fractal Antenna for Wireless Applications	Compact dual band fractal antenna for wireless applications	International conference on Electronics communication and aerospace technology (ICECA 2019)	IEEE
19	ECG system as a smart phone peripheral	ECG system as smartphone peripheral	International conference on communication and computing (ICACC 2019)	Elsevier
20	Localization and path planning of autonomous mobile robot.	Design of an autonomous mobile robot based on the sensor data fusion of lidar 360, ultrasonic sensor and wheel speed encoder	3rd International conference on electronics, communication & aerospace technology (ICECA 2019)	IEEE
21	Modeling of CNIFET using compact virtual source model and simulation of its characteristics.	Modeling of carbon nanotube field-effect transistor and evaluation of an inverter circuit	International conference on communication and electronics systems (ICCES 2019)	IEEE
22	Smart Driver Assistance System using Raspberry Pi and sensor works	Smart driver assistance system using raspberry pi and sensor networks	International conference on Internet of things	IEEE
23	Performance optimization of MicrostripBandpass filter for WLAN applications	Design of microstripbandpass filters based on genetic optimization	International conference on electronics, communication and aerospace technology	IEEE
24	Design of an active microstrip sensor for moisture detection	An active RF sensor system for large area moisture detection	International conference on Communication systems and Networks (COMSNETS 2020)	IEEE -Comm. Society

2.2.4 Initiatives related to industry interaction (10) Institute Marks : 10.00

A.Industry supported laboratories:

The following labs are being utilized by the students for carrying out projects and open lab courses.

- Atmel MCU center
- IETEsponsored Interdisciplinary Cyber Physical Systems Laboratory
- Communication System Design Laboratory
- Information Processing and Coding Laboratory
- Computational Optimization and Innovations Lab
- Hardware Security Lab
- Machine Intelligence Lab
- Smart integrated electronic radiating systems laboratory
- CISCO ThinQbator

B. Industry involvement in the program design and Curriculum.

Industry involvement will bridge the gap between the industry and institutions and will enable the students to become industry ready. Along with academicians, Board of Studies includes experts from reputed Industries. After thorough scrutinization of syllabi, wherever upgradation is required to meet the current industry requirements, they will suitably suggest and that will implemented in the curriculum after getting the approval from Academic Council. The industry experts' details involved in the curriculum design for B. Tech Regulation 2015 is shown in Table 2.2.4.B.1

Table 2.2.4.B.1 Industry experts Details

Sl. No	**B. Tech Regulation**	**Name of the Industry expert**	**Designation**	**Organization**
1.	2015	Mr. S. V. Basavaraja	Senior Researcher	Nokia India Pvt. Ltd., Bangalore

C. Industry involvement in partial delivery of any regular courses for students:

Mr. Arun Kumar from Robert Bosch delivered the following topic as a part of the course 15ECE366 Embedded Systems.

Session	**Date**	**Topics**
Session 1	24/7/2018	Introduction, Processors, General purpose and ASIPs Processor
Session 2	25/7/2018	Introduction to FPGA
Session 3	03/08/2018	Arduino Uno, Serial Communication and Timer
Session 4	10/08/2018	Controller design using Arduino
Session 5	28/08/2018	Simulink based Design for Arduino
Session 6	31/08/2018	Design and Prototyping of Embedded system using Arduino
Session 7	11/09/2018	DSP Application and Address Generation Unit, Real Time OS

D. Impact analysis of industry institute interaction and actions taken thereof:

The lectures were very much informative and provided a good understanding of Embedded System applications to the students and enabled them to carry out projects in the domain, andpublish papers in conferences as well. It also helped them in understanding the industry requirements and standards.

2.2.5 Initiatives related to industry internship/summer training (10) Institute Marks : 10.00

During the vacation period of every semester, students are allowed to do internship/ in plant/ summer training in reputed industries/companies to get practical exposure, starting from first year. It helps the students to bridge the gap between the academic institutions and industrial need. The students are also encouraged to do their final year project as part of the internship programme.

Implementation details:

2.2.5.A.1. Industrial Visit

Table 2.2.5.A.1 Industrial Visit details

Sl. No.	Company Name	Company Sector	Incorporation status	Date	No of Students
1	JVS Electronics	Engineering	Private	25.03.2017	40

2.2.5.A.2. Internship

Table 2.2.5.AInternship Details

Sl.No	Student Name	Company Name	Duration
1.	SrikrishnaPulavarthi	Bharat dynamics limited,Hyderabad	01.05.2018- 31.05.2018
2.	ParthoSarothiDey	BHEL,Tamil Nadu	30.04.18- 27.05.2018
3.	S Dheepadharshani	NIELIT,Calicut	27.11.2017- 01.11.2017
4.	S Dheepadharshani	Airports Authority of India,Coimbatore	21.05.2018- 25.05.2018
5.	Shrinidhi J	NIELIT,Calicut	27.11.2017- 01.12.2017
6.	SripathiEswar	SDSC, Sriharikota	14.05.18- 30.05.18
7.	Sai Naveen Kumar Ravela	ECIL,Hyderabad	8.05.2018- 09.06.2018
8.	V Sharan	Harvelsystems,Bengaluru	3.05.2018 - 18.05.2018

9.	Mukund S Chettiar	Airports authority of India,Bengaluru	27.11.2017- 07.12.2017
10.	Chandrashekar Krishnan	CDAC, Noida	05.06.2017- 30.06.2017
11.	Prahannathan V	Ananth Technologies Ltd Bangalore	07.05.2018- 25.05.2018
12.	RohanSriram	BSNL,	1 week
13.	K.Manish Reddy	DRDO	07.05.2018- 01.06.2018
14.	Guru Prasath C	ABB India limited, Bengaluru	1 month
15.	RakshitaVishali V	L&T technology, TamilNadu	01.06.2017- 28.06.2017
16.	V.V.AdityaTulasidas	BGPPL, Maharastra	16.06.2017- 25.06.2017
17.	Preethi.J.S	L&T, Gujarat	18.12.2016- 29.12.2016
18.	Aiswarya K V	LPSC, ISRO	07.05.2018- 21.05.2018
19.	Sachin	Airports authority of India, Bengaluru	27.11.2017- 07.12.2017
20.	GargiRjam	NIELIT	27.11.2017- 01.12.2017
21.	ChetasAnand	Airports Authority of India, Bengaluru	21.05.2018- 25.05.2018
22.	ShivaranjanMenon K	Airports Authority of India, Bengaluru	27.11.2017- 07.12.2017
23.	S Dheepadharshani	NIELIT,Calicut	27.11.2017- 01.12.2017
24.	KarteekEdumudi	Schneider,Chennai	21.11.2017- 09.12.2017

2.2.5. A.3 In plant training

Sl.No	Student Name	Company Name	Duration

1.	R.Jananika	CVRDE, Chennai	04.12.2017- 08.12.2017
2.	S.Dheepadharshani	Roots Industries India limited	June 2017
3.	Naveen Anand	BHEL,Hyderabad	14.05.2018- 29.05.2018
4.	SripathiEswar	BSNL,Hyderabad	4.12.2017- 9.12.2017
5.	Sai Naveen Kumar Ravela	BSNL,Hyderabad	4.12.2017- 9.12.2017
6.	AnnapooraniSrinivasan	BSNL, Chennai	27.11.2017- 01.12.2017
7.	V Sharan	BSNL,Chennai	19.06.2017- 23.06.2017
8.	Sabarrish s	BSNL,Chennai	19.06.2017- 23.06.2017
9.	Naveen Reddy	Bsnl,Hyderabad	04.12.17- 09.12.17
10.	K.Manish Reddy	BSNL, Hyderabad	04.12.17- 09.12.17
11.	Guru Prasanth c	BSNL, Hyderabad	04.12.2017- 09.12.2017
12.	AdityaTulasidas v	BSNL,Rajmandury	29.05.2017- 10.06.2017
13.	Aditya M	Appin Technology, Coimbatore	30.04.2018- 06.05.2018
14.	H.RakeshBabu	BSNL,Vizianagaram	07.05.2018- 19.05.2018
15.	Kavin N S	Steel Authority of India, Salem Steel Plant	01.12.2017- 07.12.2017
16.	Aiswarya K V	Keltron,Trivandrum	05.06.2017- 18.06.2017

2.2.5. B Industrial /internship /summer training of more than two weeks and post training Assessment

Table.2.2.5 Internship of more than two weeks

Sl.No	Student Name	Company Name	Duration
1.	SrikrishnaPulavarthi	Bharat dynamics limited,Hyderabad	01.05.2018-31.05.2018
2.	ParthoSarothiDey	BHEL,Tamil Nadu	30.04.18- 27.05.2018
3.	SripathiEswar	SDSC, Sriharikota	14.05.18- 30.05.18
4.	Sai Naveen Kumar Ravela	ECIL,Hyderabad	8.05.2018- 09.06.2018
5.	V Sharan	Harvelsystems,Bengaluru	3.05.2018 - 18.05.2018
6.	Chandrashekar Krishnan	CDAC, Noida	05.06.2017- 30.06.2017
7.	Prahannathan V	Ananth Technologies Ltd Bangalore	07.05.2018-25.05.2018
8.	K.Manish Reddy	DRDO	07.05.2018-01.06.2018
9.	Guru Prasath C	ABB India limited , Bengaluru	1 month
10.	RakshitaVishali V	L&T technology, TamilNadu	01.06.2017-28.06.2017

D. Student feedback on initiative

Questionnaire was used to elicit information from the students. 140 students mainly from 2016-2020 and 2015-2019 batch participated in the survey. They were asked to rate the impact (on a scale of 0 to 5) of industrial training on various aspects like academic performance, creative and analytical skills and in improving their job prospect. The following statistics shows in figure 2.2.5.D it can be observed that the Industrial training has a tangible impact on their academic performance creative skills and placements.

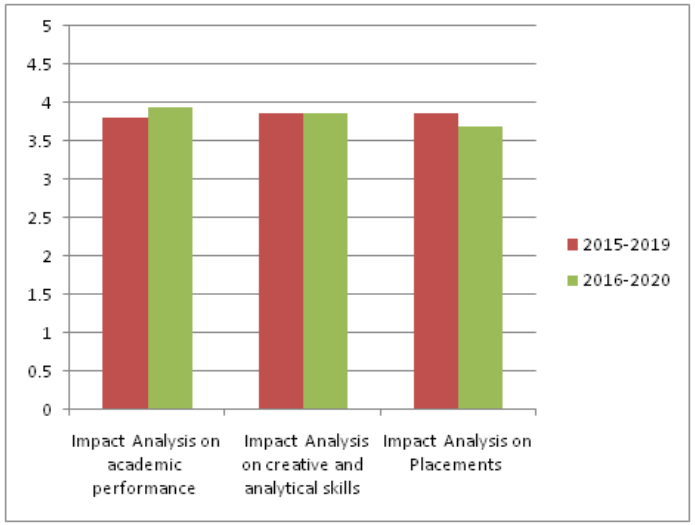


Fig. 2.2.5.D Impact Analysis

3 COURSE OUTCOMES AND PROGRAM OUTCOMES (175)

Total Marks 175.00

Define the Program specific outcomes

:

PSO1	Able to design, develop and analyze systems in signal processing, electronics, communication and computing
PSO2	Able to demonstrate competency in research and innovations.

3.1 Establish the correlation between the courses and the Program Outcomes (POs) & Program Specific Outcomes (25)

Total Marks 25.00

Institute Marks : 25.00

No. of Core Courses : 6	**C2 :** 2	**C3 :** 2	**C4 :** 2

Note : Number of Outcomes for a Course is expected to be around 6.

Course Name :	**C2 01**	**Course Year :**	**2016-2017**

Course Name	Statements
C2 01.1	Able to understand the basics of Boolean logic and the number system and codes for representing Boolean variables.
C2 01.2	Able to frame Boolean equations and truth tables for formalizing real-life phenomena

C2 01.3	Able to apply the basics of Boolean logic and the number system and codes for representing Boolean variables.
C2 01.4	Able to comprehend the design and working of basic combinational and sequential subsystems
C2 01.5	Able to analyze and design sequential systems with minimal functionality

Course Name :	**C2 13**	**Course Year :**	**2016-2017**

Course Name	Statements
C2 13.1	Able to understand concept of Electrical Energy transfer in both Current and Field form.
C2 13.2	Able to understand Transmission Line Model of Energy transfer
C2 13.3	Able to understand Guided Wave model
C2 13.4	Able to interpret the parameters and analyze the performance of a electrical energy transmission system

Course Name :	**C3 02**	**Course Year :**	**2017-2018**

Course Name	Statements
C3 02.1	Able to understand the concepts of control engineering
C3 02.2	Able to determine mathematical models of simple engineering systems
C3 02.3	Able to evaluate the performance specifications for typical control problem
C3 02.4	Able to design controllers from performance specifications of control systems
C3 02.5	Able to design a control system using CAD tools and prepare a report

Course Name :	**C3 12**	**Course Year :**	**2017-2018**

Course Name	Statements
C3 12.1	Able to understand the concepts of waveform coding schemes
C3 12.2	Able to design and analyze various modulation techniques
C3 12.3	Able to design and analyze optimum transmitter and receiver for baseband additive white Gaussian noise channel
C3 12.4	Able to exhibit the competency in the design of digital communication systems

Course Name :	C4 01	Course Year :	2018-2019

Course Name	Statements
C4 01.1	Able to understand the fundamentals of Information theory
C4 01.2	Able to analyze the basic types of codes and understand the source coding algorithms
C4 01.3	Able to derive the channel capacity of communication channel models
C4 01.4	Able to understand the encoding and decoding technique for channel coding
C4 01.5	Able to carry out implementation of different source coding and channel coding algorithms

Course Name :	C4 99	Course Year :	2018-2019

Course Name	Statements
C4 99.1	Able to identify and adopt complementary research methods
C4 99.2	Able to implement the experimental / simulation approaches
C4 99.3	Able to perform data acquisition, interpretation and analysis
C4 99.4	Able to demonstrate communication skills via oral presentation and technical report

Course Articulation Matrix :

1 . course name : C201

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C201.1	Able to und	3	-	3	-	-	-	-	-	-	-	-	-
C201.2	Able to fran	3	2	-	2	-	-	-	-	-	-	-	2
C201.3	Able to app	3	-	-	-	-	-	-	-	-	-	-	-
C201.4	Able to con	3	3	3	-	-	-	-	-	-	-	-	-
C201.5	Able to ana	3	3	3	2	-	-	-	-	2	2	2	2
Average		**3**	**2.67**	**3**	**2**					**2**	**2**	**2**	**2**

2 . course name : C213

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C213.1	Able to und	3	-	-	-	-	-	-	-	-	-	-	-
C213.2	Able to und	3	2	-	2	-	-	-	-	-	-	-	-
C213.3	Able to und	3	2	-	2	-	-	-	-	-	-	-	-
C213.4	Able to inte	3	2	2	2	-	-	-	-	-	-	-	-
Average		**1.33**	**1**	**0.5**	**1.2**					**0**	**0**	**0**	**0**

3 . course name : C302

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C302.1	Able to und	3	2	2	-	-	-	-	-	-	-	-	-
C302.2	Able to dete	3	2	2	-	-	-	-	-	-	-	-	2
C302.3	Able to eva	3	2	2	-	-	-	-	-	-	-	-	2
C302.4	Able to des	3	2	2	-	-	-	-	-	-	-	-	2
C302.5	Able to des	3	2	2	-	2	-	-	-	2	2	-	2
Average		**1.07**	**0.91**	**1.11**	**0**	**2**				**1**	**1**	**0**	**1.33**

4 . course name : C312

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C312.1	Able to und	3	3	-	-	-	-	-	-	-	-	-	3
C312.2	Able to des	3	3	3	2	-	-	-	-	-	-	-	3
C312.3	Able to des	3	3	3	2	-	-	-	-	-	-	-	3
C312.4	Able to exh	3	3	3	2	-	-	-	-	-	-	-	3
Average		**0.67**	**0.8**	**0.75**	**0.75**	**0**				**0**	**0**	**0**	**1.2**

5 . course name : C401

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C401.1	Able to und	3	-	-	-	-	-	-	-	-	-	-	2
C401.2	Able to ana	3	3	-	-	-	-	-	-	-	-	-	2

C401.3	Able to deri	3	3	-	-	-	-	-	-	-	-	-	2
C401.4	Able to und	3	2	-	-	-	-	-	-	-	-	-	2
C401.5	Able to carr	3	3	3	-	-	-	-	-	-	-	-	2
Average		**0.65**	**0.58**	**0.23**	**0**	**0**				**0**	**0**	**0**	**0.67**

6 . course name : C499

Course	Statements	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C499.1	Able to ider	3	3	-	-	-	2	2	2	3	3	-	3
C499.2	Able to imp	3	3	3	3	3	2	2	2	3	3	3	3
C499.3	Able to perf	3	3	3	3	3	2	2	2	3	3	3	3
C499.4	Able to den	3	3	3	3	3	2	2	2	3	3	3	3
Average		**0.44**	**0.52**	**0.56**	**0.82**	**2.25**	**2**	**2**	**2**	**2**	**2**	**2.25**	**0.63**

1 . Course Name : C201

Course	PSO1	PSO2
C201.1	2	-
C201.2	2	-
C201.3	2	-
C201.4	2	-
C201.5	2	-
Average	**2**	**0**

2 . Course Name : C213

Course	PSO1	PSO2
C213.1	3	2
C213.2	3	2
C213.3	3	2
C213.4	3	2

Average	**3**	**2**

3 . Course Name : C302

Course	PSO1	PSO2
C302.1	2	-
C302.2	3	-
C302.3	3	-
C302.4	3	2
C302.5	3	2
Average	**2.8**	**2**

4 . Course Name : C312

Course	PSO1	PSO2
C312.1	3	-
C312.2	3	2
C312.3	3	2
C312.4	3	2
Average	**3**	**2**

5 . Course Name : C401

Course	PSO1	PSO2
C401.1	3	2
C401.2	3	2
C401.3	3	2
C401.4	3	2
C401.5	3	2
Average	**3**	**2**

6 . Course Name : C499

Course	PSO1	PSO2
C499.1	3	3
C499.2	3	3
C499.3	3	3
C499.4	3	3
Average	**3**	**3**

Program Articulation Matrix :

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ENG11	PO1	PO2	PO3	PO4	PO5	PO6	PO7	2	2	3	PO11	2
15MAT111	3	3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15CSE10(	2	1	3	PO4	3	PO6	PO7	3	3	3	PO11	PO12
15PHY10(	2	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15PHY10(	2	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15PHY18	PO1	2	1	2	1	PO6	1	PO8	1	2	1	PO12
15PHY18	PO1	2	1	2	1	PO6	1	PO8	1	2	1	PO12
15MEC18	2	2	1	PO4	1	PO6	PO7	PO8	2	1	PO11	1
15MEC18	2	2	1	PO4	1	PO6	PO7	PO8	2	1	PO11	1
15MEC10	3	3	3	2	PO5	2	PO7	PO8	PO9	3	PO11	3
15MEC10	3	3	3	2	PO5	2	PO7	PO8	PO9	3	PO11	3
15CUL10	PO1	PO2	PO3	PO4	PO5	PO6	2	2	3	2	PO11	3
15CUL10	PO1	PO2	PO3	PO4	PO5	PO6	2	2	3	2	PO11	3
15MAT12	3	3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15MAT12	3	3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15CHY10(	3	3	2	1	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CHY10(	3	3	2	1	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

15CSE10	1	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CSE10	1	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE111	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE111	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE11	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE11	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CHY18	3	3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CHY18	3	3	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15EEE18	3	2	2	PO4	PO5	PO6	PO7	PO8	3	PO10	PO11	1
15CSE18	1	2	2	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15EEE18	3	2	2	PO4	PO5	PO6	PO7	PO8	3	PO10	PO11	1
15CSE18	1	2	2	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CUL111	PO1	PO2	PO3	PO4	PO5	PO6	2	2	3	2	PO11	3
15ECE20	3	2	2	2	PO5	PO6	PO7	PO8	2	2	PO11	2
15CUL111	PO1	PO2	PO3	PO4	PO5	PO6	2	2	3	2	PO11	3
15ECE20	3	2	2	2	PO5	PO6	PO7	PO8	2	2	PO11	2
15ECE20	3	3	3	2	PO5	PO6	PO7	PO8	2	2	2	2
15ECE20	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE20	3	3	3	2	PO5	PO6	PO7	PO8	2	2	2	2
15ECE20	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE20	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MAT20	3	2	PO3	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE20	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MAT20	3	2	PO3	PO4	1	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15MAL10	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15HIN101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15MAL10	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15HIN101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15ECE28	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3

15ECE28	3	2	2	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2
15ECE28	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3
15AVP20	PO1	PO2	PO3	PO4	PO5	3	2	3	3	3	PO11	3
15ECE21	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15AVP20	PO1	PO2	PO3	PO4	PO5	3	2	3	3	3	PO11	3
15ECE21	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE21	3	2	3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE21	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE21	3	2	3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE21	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15MAT21	3	3	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ENG23	PO1	PO2	PO3	1	PO5	PO6	PO7	PO8	3	3	PO11	PO12
15MAT21	3	3	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ENG23	PO1	PO2	PO3	1	PO5	PO6	PO7	PO8	3	3	PO11	PO12
15ECE28	3	2	3	PO4	3	PO6	PO7	PO8	2	2	PO11	2
15ECE28	3	3	2	PO4	2	PO6	PO7	PO8	2	2	PO11	2
15ECE28	3	2	3	PO4	3	PO6	PO7	PO8	2	2	PO11	2
15ECE28	3	3	2	PO4	2	PO6	PO7	PO8	2	2	PO11	2
15SSK21	PO1	3	PO3	2	PO5	PO6	PO7	2	3	3	PO11	3
15AVP211	PO1	PO2	PO3	PO4	PO5	3	2	3	2	2	PO11	3
15SSK21	PO1	3	PO3	2	PO5	PO6	PO7	2	3	3	PO11	3
15AVP211	PO1	PO2	PO3	PO4	PO5	3	2	3	2	2	PO11	3
15ECE30	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	2	3
15ECE30	3	2	2	PO4	2	PO6	PO7	PO8	2	2	2	2
15ECE30	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	2	3
15ECE30	3	2	2	PO4	2	PO6	PO7	PO8	2	2	2	2
15ECE30	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE30	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE30	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2

15ECE30	3	2	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MAT30	1	1	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15ECE38	3	3	PO3	PO4	PO5	PO6	PO7	PO8	2	2	PO11	PO12
15MAT30	1	1	1	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	1
15ECE38	3	3	PO3	PO4	PO5	PO6	PO7	PO8	2	2	PO11	PO12
15ECE38	3	3	2	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2
15SSK30	PO1	3	PO3	2	PO5	PO6	PO7	PO8	3	3	2	3
15ECE38	3	3	2	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2
15SSK30	PO1	3	PO3	2	PO5	PO6	PO7	PO8	3	3	2	3
15ECE31	3	3	3	3	3	3	PO7	PO8	3	3	PO11	3
15ECE31	3	3	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE31	3	3	3	3	3	3	PO7	PO8	3	3	PO11	3
15ECE31	3	3	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE31	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE31	3	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE31	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE31	3	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE36	3	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE35	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE36	3	2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE35	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE34	3	3	3	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2
15ECE33	3	2	2	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE34	3	3	3	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2
15ECE33	3	2	2	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE38	3	3	2	PO4	2	PO6	PO7	PO8	2	2	PO11	2
15ECE38	3	2	PO3	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE38	3	3	2	PO4	2	PO6	PO7	PO8	2	2	PO11	2
15ECE38	3	2	PO3	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	2

15ECE38	3	3	3	2	2	2	2	2	2	3	2	2
15SSK31	PO1	3	PO3	2	PO5	PO6	PO7	2	3	3	PO11	3
15ECE38	3	3	3	2	2	2	2	2	2	3	2	2
15SSK31	PO1	3	PO3	2	PO5	PO6	PO7	2	3	3	PO11	3
15ECE40	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE40	3	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE40	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE40	3	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ENV30	1	1	1	1	PO5	2	3	3	1	2	PO11	1
15ECE34	3	2	2	PO4	2	3	PO7	PO8	3	3	3	2
15ENV30	1	1	1	1	PO5	2	3	3	1	2	PO11	1
15ECE34	3	2	2	PO4	2	3	PO7	PO8	3	3	3	2
15ECE35	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MEC33	PO1	PO2	PO3	PO4	PO5	2	PO7	2	PO9	3	2	2
15ECE35	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MEC33	PO1	PO2	PO3	PO4	PO5	2	PO7	2	PO9	3	2	2
15ECE33	3	3	2	2	3	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE36	3	2	3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE33	3	3	2	2	3	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE36	3	2	3	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE48	3	3	2	2	2	PO6	PO7	PO8	PO9	2	PO11	2
15ECE49	3	3	3	3	3	2	2	2	3	3	3	3
15ECE48	3	3	2	2	2	PO6	PO7	PO8	PO9	2	PO11	2
15ECE49	3	3	3	3	3	2	2	2	3	3	3	3
15ECE38	3	2	PO3	2	3	PO6	PO7	PO8	2	2	2	PO12
15ECE34	3	3	PO3	2	PO5	PO6	PO7	PO8	PO9	2	PO11	2
15ECE38	3	2	PO3	2	3	PO6	PO7	PO8	2	2	2	PO12
15ECE34	3	3	PO3	2	PO5	PO6	PO7	PO8	PO9	2	PO11	2
15MEC41	3	2	2	PO4	PO5	3	PO7	PO8	PO9	1	2	3

15ECE36	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MEC41	3	2	2	PO4	PO5	3	PO7	PO8	PO9	1	2	3
15ECE36	3	3	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE37	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE37	3	2	3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE37	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE37	3	2	3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE49	3	3	3	3	3	2	2	2	3	3	3	3
15ECE36	3	2	2	2	2	2	PO7	PO8	3	2	PO11	PO12
15ECE49	3	3	3	3	3	2	2	2	3	3	3	3

Course	PSO1	PSO2
15AVP20	PSO1	PSO2
15AVP211	PSO1	PSO2
15CHY10	PSO1	PSO2
15CHY18	PSO1	PSO2
15CSE10	PSO1	PSO2
15CSE10	PSO1	PSO2
15CSE18	PSO1	PSO2
15CUL10	PSO1	PSO2
15CUL111	PSO1	PSO2
15ECE111	2	2
15ECE112	2	PSO2
15ECE20	3	2
15ECE20	2	PSO2
15ECE20	2	PSO2
15ECE20	2	PSO2
15ECE21	3	PSO2
15ECE21	2	2

15ECE21	3	2
15ECE28	2	2
15ECE28	3	2
15ECE28	3	2
15ECE28	3	PSO2
15ECE30	3	2
15ECE30	3	2
15ECE30	3	PSO2
15ECE30	2	PSO2
15ECE31	3	PSO2
15ECE31	3	2
15ECE31	3	2
15ECE31	2	PSO2
15ECE33	3	2
15ECE33	2	PSO2
15ECE34	3	3
15ECE34	3	PSO2
15ECE34	3	3
15ECE35	3	2
15ECE35	3	3
15ECE36	3	3
15ECE36	2	2
15ECE36	3	3
15ECE36	2	PSO2
15ECE37	3	PSO2
15ECE37	3	3
15ECE38	2	PSO2
15ECE38	3	PSO2
15ECE38	3	2

15ECE38	3	PSO2
15ECE38	2	2
15ECE38	3	2
15ECE40	3	2
15ECE40	3	2
15ECE48	3	PSO2
15ECE49	3	3
15ECE49	PSO1	PSO2
15EEE18	PSO1	PSO2
15ENG11	PSO1	PSO2
15ENG23	PSO1	PSO2
15ENV30	PSO1	PSO2
15HIN101	PSO1	PSO2
15MAL10	PSO1	PSO2
15MAT111	PSO1	PSO2
15MAT12	PSO1	PSO2
15MAT20	PSO1	PSO2
15MAT21	2	PSO2
15MAT30	PSO1	PSO2
15MEC10	PSO1	PSO2
15MEC18	PSO1	PSO2
15MEC33	PSO1	PSO2
15MEC41	3	1
15PHY10	PSO1	PSO2
15PHY18	PSO1	PSO2
15SSK21	PSO1	PSO2
15SSK30	PSO1	PSO2
15SSK31	PSO1	PSO2

3.2 Attainment of Course Outcomes (75) Total Marks 75.00

Institute Marks : 10.00

Attainment of Course Outcomes

3.2.1 Describe the assessment tools and processes used to gather the data upon which the evaluation of Course Outcome is based (10)

ASSESSMENT TOOLS

The evaluation of the course outcome is done using Direct Assessment Tools and Indirect Assessment Tools. The weightage for Direct Assessment Tools is 80% and for Indirect Assessment Tools is 20%. They are described below

Direct Assessment Tools

Type of Assessment	CIE assessment / SEE Assessment	Evaluation Method	Description
Direct Assessment Tools - **Theory Course**	CIE Assessment	Periodical tests	Two periodical tests are conducted in a semester for each course.
		Continuous assessment(One or more Components as decided in the course committee meeting)	• Assignments • Tutorials • Quizzes/Online tests • Term work • Seminars
	SEE Assessment	End Semester exam	This forms a major component in CO attainment assessment, as this is being conducted at the end of each course. It covers the entire syllabus. The type of questions include objective type, numerical problems, design problems and theoretical questions.

Type of Assessment	CIE assessment / SEE Assessment	Evaluation Method	Description
Direct Assessment Tools - **Lab Course**	*CIE* Assessment	Periodical tests	This forms an important assessment in lab course. Lab periodicals are conducted during the lab course to evaluate student's understanding of experiments, handling equipment, procedures, and computational skills. This forms an intermediate evaluation before end semester.

		Continuous assessment (CA)	Every lab experiment is evaluated comprising the componentslike preparation, viva voce, experiment and report. The components are decided by the course committee meeting.
	SEE Assessment	End Semester exam	This assessment is done at the end of course. The components of evaluation are generally viva voce and experimental results.

Type of Assessment	**CIE assessment / SEE Assessment**	**Evaluation Method**	**Process**
Direct Assessment Tools - **Project Course**	*CIE* Assessment	Internal reviews	Minimum 3 reviews per phase are conducted. Student's presentation skills, understanding the proposed work, objectives, theoretical background, methodology, tool expertise, results discussion etc., are the various components in each review. This is evaluated on individual basis.
	SEE Assessment	External reviews	At the end of course, external review is conducted by experts from industry/academics. Students present their problem, methodology, their contribution to the proposed work and discuss the results. The reports and documentation of the project are also evaluated.

Indirect Assessment Tools

Type of Assessment	**Evaluation Method**	**Process**
Indirect Assessment Tools	Course exit feedback	For all theory, laboratory and project courses, a feedback is obtained from the students on attainment of course outcomes.

Table 3.2.1. A. various assessment tools

Weightage for assessment of Theory and Laboratory courses are as follows,

Subject Type	CIE Weightage	SEE Weightage	Overall Assessment Weightage
Theory	50%	50%	Direct Assessment Tools (80%)
Laboratory	80%	20%	
Project	60%	40%	
Theory/ Laboratory/Project	Course exit feedback		Indirect Assessment Tool (20%)

Table.3.2.1.B weightage for Assessment

PROCESSES OF ATTAINMENT COMPUTATION

The CO attainment is computed using the excel sheets specifically made for this purpose. **Direct Assessment tools**

The following procedure is followed to do the CO attainment computation using the **direct assessment tools** for a course.

Step 1:	For every exam the course mentor sets the assessment question paperwith CO mapping, BTL mapping and Marks for each question.
Step 2:	After each exam the question wise mark data is entered in the excel sheet and attainment is calculated for each section by the faculty concerned
Step 3:	The CO attainment through CIE and SEE tools is obtained using the excel sheet. This is done for each section
Step 4:	The mentor uses the excel sheets prepared for each section and calculates the CIE, SEE and Direct CO attainment for overall course.

Indirect Assessment tools

The following procedure is followed to do the CO attainment computation using the **Indirect assessment tools** for a course.

At the end of the semester the students are given an online questionnaire regarding the Course Outcome attainment on a 5-rubric scale, which is converted to a corresponding level (1 to 3).

Final CO attainment

CO attainment obtained using the direct and indirect assessment tools are combined using an excel sheet to obtain the final CO attainment of the course.

Assessment Method	Attainment	*CO attainment in % for a section (for example 15ECE202- Digital Circuits and System, Section- A, B, C)*
Direct Assessment	CO Attainment	CO attainment for an exam $= \frac{\text{Number of students who have scored above threshold*\% of marks}}{\text{Total number of students in the section}}$
		CIE attainment for a CO $= \frac{\text{Sumthe CO attaiment \% of all the CIE exams where the CO is addressed}}{\text{Total number of such exams}}$
		SEE attainment for a CO $= \frac{\text{Number of students who have scored above threshold* \% of marks in SEE}}{\text{Total number of students in the section}}$
Indirect Assessment		Indirect attainment for a CO $= \frac{\text{Sum of attainment percent of all the students}}{\text{Total number of students in the section}}$

Table 3.2.1 CO attainment calculation for a class

*Threshold for CIE and SEE 50% for theory courses &70% for lab and project courses

Assessment Method	Attainment	*CO Attainment % for a class (for example 15ECE202- Digital Circuits and Systems)*
Direct Assessment	CO Attainment	$CIE = \frac{\sum_{i=A}^{n} N_i * CIE_i}{\sum_{i=A}^{n} N_i}$ $SEE = \frac{\sum_{i=A}^{n} N_i * SEE_i}{\sum_{i=A}^{n} N_i}$ $Direct = a * CIE + b * SEE$
Indirect Assessment		$Indirect = \frac{\sum_{i=A}^{n} N_i * Indirect_i}{\sum_{i=A}^{n} N_i}$
Final CO attainment		$Final = 0.8 * Direct + 0.2 * Indirect$

Table 3.2.1 CO attainment calculation for a course

where,

i - Section

n - Maximum section

N_i- student strength of the i^{th} section

SEE_i- SEE CO attainment % for the i^{th} section

CIE_i - CIE CO attainment % for the i^{th} section

$Indirect_i$ - Indirect CO attainment % for the i^{th} section

SEE - SEE CO attainment % for the class

CIE - CIE CO attainment % for the class

Indirect - Indirect CO attainment % for the class

Direct - direct CO attainment % for the class

Final - final CO attainment % for the class

a=0.5 and b=0.5 for theory

a=0.8 and b=0.2 for lab

a=0.6 and b=0.4 for project

CO Attainment level for a class (for example second year 15ECE202- Digital Circuits and Systems)

$$\text{CIE\_L or SEE\_L or Indirect\_L} = \begin{cases} 1 \text{ if } 0 \leq \text{CIE/SEE/Indirect} < 40 \\ 2 \text{ if } 40 \leq \text{CIE/SEE/Indirect} < 60 \\ 3 \text{ if } 60 \leq \text{CIE/SEE/Indirect} \leq 100 \end{cases}$$

Direct_L= a * CIE_L + b * SEE_L

0.8 * Direct_L + 0.2 * Indirect_L

where,

SEE - SEE CO attainment % for the class

CIE - CIE CO attainment % for the class

Indirect - Indirect CO attainment % for the class

SEE L - SEE CO attainment level for the class

CIE L - CIE CO attainment level for the class

Indirect_L- Indirect CO attainment level for the class

Direct_L - direct CO attainment level for the class

Final_L - final CO attainment level for the class

a=0.5 and b=0.5 for theory

a=0.8 and b=0.2 for lab

a=0.6 and b=0.4 for project

Final CO Attainment status for a class *15ECE202- Digital Circuits and Systems*

$$\text{Final\_status} = \begin{cases} \text{YESforFinal} \geq \text{target} \\ \text{NOforFinal} < target \end{cases}$$

$$\text{Target} = \begin{cases} 50\% \text{ for theory courses} \\ 60\% \text{ for lab and project courses} \end{cases}$$

Sample calculation

A course 15ECE202 Digital circuits and systems is taken and the process is illustrated for CO1 similar process was followed for all other CO's

Assessment Method	Attainment	*CO 1 attainment in % for 15ECE202- Digital Circuits and System, Section -A*
Direct Assessment	CO Attainment	Step 1 – CO attainment for Periodical 1 $\frac{28\ (students\ scored\ above\ 50\ \%\ of\ marks)}{62\ (number\ of\ students\ in\ the\ section)} = 45.6$
		Step 2 – CIE attainment for a CO1 $\frac{45.6\ (Periodical\ 1) + 87.1(Periodical\ 2) + 93.6\ (CA)}{3(Total\ number\ of\ such\ exams)} = 75.27$
		Step 3 – SEE attainment for a CO $\frac{53(students\ scored\ above\ \ 50\ \%\ of\ marks)}{62\ (number\ of\ students\ in\ the\ section)} = 85.48$
Indirect Assessment		Step 4 – Indirect attainment for a CO = 75.47

Assessment Method	Attainment	*CO 1 Attainment % for 15ECE202- Digital Circuits and Systems*
Direct Assessment	CO Attainment	**Step 1 – CIE Attainment** $\frac{75.27(A) + 66.67(B) + 59.44(C)}{62(A) + 61(B) + 60(C)} = 67.21$
		Step 2 – SEE Attainment $\frac{85.48(A) + 59.02(B) + 60(C)}{62(A) + 61(B) + 60(C)} = 68.31$
		Step 3 – Direct Attainment 0.5 * 67.21(CIE) + 0.5 * 68.31(SEE) =67.76
Indirect Assessment		**Step 4–** $\frac{75.47(A) + 79.4(B) + 77.6(C)}{62(A) + 61(B) + 60(C)} = 77.48$
Final CO attainment		**Step 5 -** 0.8 * 67.76(Direct) + 0.2 * 77.48(Indirect) = 69.7

CO1 Attainment level for 15ECE202- Digital Circuits and Systems

CIE_L =3; SEE_L=3; Indirect_L =3

0.5 * 3(CIE_L) + 0.5 * 3(SEE_L) = 3(Direct_L)

0.8 * 3 + 0.2 * 3 = 3(Final_L)

Final* CO1 Attainment level for 15ECE202- Digital Circuits and Systems *is YES

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

Institute Marks : 65.00

Subject Code and Name	Sem	CO's	Internal Examination		End Semester Examination		Direct		Indirect		Final Course Attainment		Target	Attainment
			CIE		SEE						80% of Direct and 20% of Indirect		%	Yes/ No
			Attainment	Level	Attainment	Level	Attainment	Level	Attainment	Level	Attainment	Level		
15ECE201 Applied Electromagnetics	3	CO1	63.66	3	60.66	3	62.16	3	83.57	3	66.44	3	50	YES
		CO2	57.93	2	60.66	3	59.3	2.5	83.57	3	64.15	2.6	50	YES
		CO3	75.41	3	60.66	3	68.04	3	83.57	3	71.15	3	50	YES
		CO4	75.41	3	60.66	3	68.04	3	83.57	3	71.15	3	50	YES
		CO5	75.41	3	27.32	1	51.37	2	83.57	3	57.81	2.2	50	YES
15ECE202 Digital Circuits and Systems	3	CO1	67.21	3	68.31	3	67.76	3	77.48	3	69.7	3	50	YES
		CO2	64.3	3	90.17	3	77.24	3	77.48	3	77.29	3	50	YES
		CO3	86.62	3	80.87	3	83.75	3	77.48	3	82.5	3	50	YES
		CO4	56.29	2	34.97	1	45.63	1.5	77.48	3	52	1.8	50	YES
		CO5	70.23	3	51.91	2	61.07	2.5	77.48	3	64.35	2.6	50	YES
15ECE203 Network Theory	3	CO1	58.1	2	72.13	3	65.12	2.5	83.09	3	68.71	2.6	50	YES
		CO2	51.55	2	48.63	2	50.09	2	83.09	3	56.69	2.2	50	YES
		CO3	54.92	2	41.53	2	48.23	2	83.09	3	55.2	2.2	50	YES
		CO4	86.34	3	34.42	1	60.38	2	83.09	3	64.92	2.2	50	YES
15ECE204 Signal Processing I	3	CO1	65.58	3	50.27	2	57.93	2.5	85.97	3	63.54	2.6	50	YES
		CO2	70.77	3	59.02	2	64.9	2.5	85.97	3	69.11	2.6	50	YES
		CO3	77.87	3	57.92	2	67.9	2.5	85.97	3	71.51	2.6	50	YES
		CO4	50.09	2	26.78	1	38.44	1.5	85.97	3	47.95	1.8	50	NO
15MAT202 Linear Algebra	3	CO1	84.47	3	75.9	3	80.19	3	87.31	3	81.61	3	50	YES
		CO2	92.52	3	75.9	3	84.21	3	87.31	3	84.83	3	50	YES
		CO3	84.5	3	75.9	3	80.2	3	87.31	3	81.62	3	50	YES
		CO4	82.48	3	75.9	3	79.19	3	87.31	3	80.81	3	50	YES

15MAL101 Malayalam	3	CO1	100	3	100	3	100	3	85	3	97	3	50	YES
		CO2	100	3	100	3	100	3	85	3	97	3	50	YES
		CO3	100	3	100	3	100	3	85	3	97	3	50	YES
		CO4	100	3	100	3	100	3	85	3	97	3	50	YES
		CO5	100	3	100	3	100	3	85	3	97	3	50	YES
15HIN101 Hindi	3	CO1	100	3	100	3	100	3	82	3	96.4	3	50	YES
		CO2	100	3	100	3	100	3	82	3	96.4	3	50	YES
		CO3	100	3	100	3	100	3	82	3	96.4	3	50	YES
		CO4	100	3	100	3	100	3	82	3	96.4	3	50	YES
15ECE281 Digital Circuits and Systems Lab	3	CO1	81.87	3	93.41	3	84.18	3	77.3	3	82.8	3	60	YES
		CO2	81.87	3	93.41	3	84.18	3	77.3	3	82.8	3	60	YES
		CO3	79.12	3	93.41	3	81.98	3	77.3	3	81.04	3	60	YES
		CO4	79.12	3	93.41	3	81.98	3	77.3	3	81.04	3	60	YES
15ECE282 Signals Processing I Lab	3	CO1	55.19	2	66.67	3	57.49	2.2	87.63	3	63.52	2.36	60	YES
		CO2	55.19	2	66.67	3	57.49	2.2	87.63	3	63.52	2.36	60	YES
		CO3	55.74	2	66.67	3	57.93	2.2	87.63	3	63.87	2.36	60	YES
		CO4	58.2	2	66.67	3	59.89	2.2	87.63	3	65.44	2.36	60	YES
15AVP201 Amrita Values Programme I		CO1	99.46	3	78.6	3	89.0	3	81	3	87.4	3	50	Yes
		CO2	99.46	3	78.6	3	89.0	3	83.6	3	87.9	3	50	Yes
		CO3	99.46	3	78.6	3	89.0	3	81	3	87.4	3	50	Yes
		CO4	100	3	78.6	3	89.3	3	80	3	87.4	3	50	Yes
		CO5	100	3	78.6	3	89.3	3	81.3	3	87.7	3	50	Yes
15ECE211 Electronic Circuits	4	CO1	62.66	3	42.62	2	52.64	2.5	88.39	3	59.79	2.6	50	YES
		CO2	63.39	3	46.99	2	55.19	2.5	88.39	3	61.83	2.6	50	YES
		CO3	70.49	3	56.28	2	63.39	2.5	88.39	3	68.39	2.6	50	YES
		CO4	71.59	3	56.29	2	63.94	2.5	88.39	3	68.83	2.6	50	YES
		CO5	95.08	3	77.05	3	86.07	3	88.39	3	86.53	3	50	YES
15ECE212 Signal Processing II	4	CO1	79.24	3	73.23	3	76.24	3	91.65	3	79.32	3	50	YES
		CO2	77.87	3	73.23	3	75.55	3	91.65	3	78.77	3	50	YES
		CO3	77.87	3	73.23	3	75.55	3	91.65	3	78.77	3	50	YES

		CO4	79.24	3	73.23	3	76.24	3	91.65	3	79.32	3	50	YES
15ECE213 Transmission Lines and Waveguides	4	CO1	70.22	3	34.43	1	52.33	2	84.55	3	58.77	2.2	50	YES
		CO2	56.47	2	34.43	1	45.45	1.5	84.55	3	53.27	1.8	50	YES
		CO3	90.17	3	34.43	1	62.3	2	84.55	3	66.75	2.2	50	YES
		CO4	59.29	2	34.43	1	46.86	1.5	84.55	3	54.4	1.8	50	YES
15MAT213 Probability and Random Processes	4	CO1	56.94	2.33	33.84	1.33	41.58	1.83	89.56	3	51.18	2.07	50	YES
		CO2	54.17	2.33	33.84	1.33	40.45	1.83	89.56	3	50.28	2.07	50	YES
		CO3	65.25	2.67	33.84	1.33	42.68	2	89.56	3	52.06	2.2	50	YES
		CO4	79.01	2.67	33.84	1.33	39.93	2	89.56	3	49.86	2.2	50	YES
		CO5	79.01	2.67	33.84	1.33	46.58	2	89.56	3	55.18	2.2	50	YES
		CO6	79.01	2.67	33.84	1.33	59.84	2	89.56	3	65.79	2.2	50	YES
15ENG233 Technical Communication	4	CO1	82.99	3	79.52	3	80.69	3	76.37	3	81.67	3	50	YES
		CO2	82.99	3	79.52	3	80.69	3	76.37	3	81.67	3	50	YES
		CO3	82.99	3	91.03	3	86.45	3	76.37	3	83.1	3	50	YES
		CO4	82.99	3	91.03	3	86.45	3	76.37	3	88.31	3	50	YES
15ECE285 Digital Signal Processing Lab	4	CO1	65.03	3	57.38	2	63.5	2.8	86.18	3	68.04	2.84	60	YES
		CO2	65.58	3	57.38	2	63.94	2.8	86.18	3	68.39	2.84	60	YES
		CO3	64.76	3	57.38	2	63.28	2.8	86.18	3	67.86	2.84	60	YES
		CO4	79.24	3	57.38	2	74.87	2.8	86.18	3	77.13	2.84	60	YES
15ECE286 Electronic Circuits Lab.	4	CO1	65.85	3	48.09	2	62.3	2.8	88.64	3	67.57	2.84	60	YES
		CO2	65.85	3	48.09	2	62.3	2.8	88.64	3	67.57	2.84	60	YES
		CO3	81.97	3	48.09	2	75.19	2.8	88.64	3	77.88	2.84	60	YES
		CO4	66.4	3	48.09	2	62.74	2.8	88.64	3	67.92	2.84	60	YES
15SSK221 Soft Skills I	4	CO1	99.45	3	0	0	49.73	1.5	69.72	3	53.73	1.8	50	YES
		CO2	99.45	3	0	0	49.73	1.5	71.5	3	54.08	1.8	50	YES
		CO3	99.45	3	21.86	1	60.66	2	64.72	3	61.47	2.2	50	YES
		CO4	99.45	3	21.86	1	60.66	2	60.95	3	60.72	2.2	50	YES
		CO5	99.45	3	21.86	1	99.45	2	65.27	3	92.61	2.2	50	YES
		CO6	99.45	3	81.97	3	90.71	3	66.95	3	85.96	3	50	YES
15AVP211 Amrita Values Programme II	4	CO1	90.7	3	78.5	3	84.6	3	83.57	3	84.4	3	50	YES
		CO2	90.7	3	78.5	3	84.6	3	83.57	3	84.4	3	50	YES

		CO3	94.4	3	78.5	3	86.5	3	83.57	3	85.9	3	50	YES
		CO4	96.9	3	78.5	3	87.7	3	83.57	3	86.9	3	50	YES
		CO5	99.46	3	78.5	3	89.0	3	83.57	3	87.9	3	50	YES
15ECE301 Communication Theory	5	CO1	62.82	3	23.08	1	42.95	2	88.07	3	51.97	2.2	50	YES
		CO2	61.54	3	18.13	1	39.84	2	88.07	3	49.49	2.2	50	NO
		CO3	58.52	2	25.27	1	41.9	1.5	88.07	3	51.13	1.8	50	YES
		CO4	64.47	3	25.28	1	44.88	2	88.07	3	53.52	2.2	50	YES
15ECE302 Control Systems Engineering	5	CO1	19.23	1	57.14	2	38.19	1.5	81.42	3	46.84	1.8	50	NO
		CO2	23.35	1	36.27	1	29.81	1	81.42	3	40.13	1.4	50	NO
		CO3	28.75	1	18.13	1	23.44	1	81.42	3	35.04	1.4	50	NO
		CO4	60.44	3	14.29	1	37.37	2	81.42	3	46.18	2.2	50	NO
		CO5	95.6	3	0	0	95.6	1.5	81.42	3	92.76	1.8	50	YES
15ECE303 Linear Integrated Circuits	5	CO1	60.17	3	40.11	2	50.14	2.5	87.6	3	57.63	2.6	50	YES
		CO2	62.64	3	47.25	2	54.95	2.5	87.6	3	61.48	2.6	50	YES
		CO3	67.95	3	46.15	2	57.05	2.5	87.6	3	63.16	2.6	50	YES
		CO4	84.62	3	46.7	2	65.66	2.5	87.6	3	70.05	2.6	50	YES
		CO5	84.62	3	63.74	3	74.18	3	87.6	3	76.86	3	50	YES
15ECE304 Microprocessors and Microcontrollers	5	CO1	70.61	3	41.76	2	56.19	2.5	87.36	3	62.42	2.6	50	YES
		CO2	62.64	3	28.02	1	45.33	2	87.36	3	53.74	2.2	50	YES
		CO3	78.57	3	17.03	1	47.8	2	87.36	3	55.71	2.2	50	YES
		CO4	74.18	3	28.02	1	51.1	2	87.36	3	58.35	2.2	50	YES
15MAT303 Optimization Techniques	5	CO1	75.78	3	44.82	2	60.18	2.5	86.78	3	65.5	2.6	50	YES
		CO2	78.55	3	47.6	2	68.8	2.5	86.78	3	72.4	2.6	50	YES
		CO3	82.99	3	47.1	2	57.66	2.5	86.78	3	63.48	2.6	50	YES
		CO4	82.99	3	37.3	2	67.3	2.5	86.78	3	71.19	2.6	50	YES
15ECE381 Circuits and Communication Lab	5	CO1	48.9	2	52.49	2	49.62	2	81.48	3	55.99	2.2	60	NO
		CO2	43.37	2	30.94	1	40.88	1.8	81.48	3	49	2.04	60	NO
		CO3	46.14	2	52.49	2	47.41	2	81.48	3	54.22	2.2	60	NO
		CO4	53.04	2	52.49	2	52.93	2	81.48	3	58.64	2.2	60	NO
		C05	47.79	2	52.49	2	48.73	2	81.48	3	55.28	2.2	60	NO
15ECE382 Microcontroller Lab	5	CO1	62.09	3	23.63	1	54.4	2.6	86.87	3	60.89	2.68	60	YES

		CO2	62.09	3	23.63	1	54.4	2.6	86.87	3	60.89	2.68	60	YES
		CO3	62.09	3	23.63	1	54.4	2.6	86.87	3	60.89	2.68	60	YES
		CO4	62.09	3	23.63	1	54.4	2.6	86.87	3	60.89	2.68	60	YES
15SSK321 Soft Skills II	5	CO1	97.25	3	0	0	48.63	1.5	74.12	3	53.73	1.8	50	YES
		CO2	97.25	3	0	0	48.63	1.5	76.43	3	54.19	1.8	50	YES
		CO3	97.25	3	7.7	1	52.48	2	75.66	3	57.12	2.2	50	YES
		CO4	97.25	3	7.7	1	52.48	2	73.3	3	56.64	2.2	50	YES
		CO5	86.26	3	7.7	1	86.26	2	76	3	84.21	2.2	50	YES
		CO6	86.26	3	82.42	3	84.34	3	76.65	3	82.8	3	50	YES
15ECE311 Data Communication and Networks	6	CO1	64.56	3	50.55	2	57.56	2.5	75.91	3	61.23	2.6	50	YES
		CO2	58.06	2	46.15	2	52.11	2	75.91	3	56.87	2.2	50	YES
		CO3	54.4	2	46.15	2	50.28	2	75.91	3	55.41	2.2	50	YES
		CO4	97.8	3	0	0	48.9	1.5	75.91	3	54.3	1.8	50	YES
15ECE312 Digital Communication	6	CO1	65.11	3	25.82	1	45.47	2	84.68	3	53.31	2.2	50	YES
		CO2	52.57	2	13.19	1	32.88	1.5	84.68	3	43.24	1.8	50	NO
		CO3	63.74	3	46.15	2	54.95	2.5	84.68	3	60.9	2.6	50	YES
		CO4	65.93	3	12.09	1	39.01	2	84.68	3	48.14	2.2	50	NO
15ECE313 VLSI Design	6	CO1	66.91	3	45.05	2	55.98	2.5	78.35	3	60.45	2.6	50	YES
		CO2	82.78	3	91.73	3	87.26	3	78.35	3	85.48	3	50	YES
		CO3	87.36	3	62.35	3	74.86	3	78.35	3	75.56	3	50	YES
		CO4	76.65	3	53.16	2	64.91	2.5	78.35	3	67.6	2.6	50	YES
15ECE314 Computer System Architecture	6	CO1	66.12	3	66.48	3	66.3	3	91.51	3	71.34	3	50	YES
		CO2	75.55	3	68.13	3	71.84	3	91.51	3	75.77	3	50	YES
		CO3	68.41	3	54.94	2	61.68	2.5	91.51	3	67.65	2.6	50	YES
		CO4	98.9	3	59.89	2	79.4	2.5	91.51	3	81.82	2.6	50	YES
15ECE367 Hardware Security and Trust	6	CO 1	80.5	3	98.11	3	89.31	3	91.6	3	89.77	3	50	YES
		CO 2	64.78	3	62.26	3	63.52	3	91.6	3	69.14	3	50	YES
		CO 3	75.47	3	32.08	1	53.78	2	91.6	3	61.34	2.2	50	YES
		CO 4	75.47	3	58.49	2	66.98	2.5	91.6	3	71.9	2.6	50	YES
15ECE356 Satellite Communication	6	CO 1	76.79	3	50	2	63.4	2.5	80	3	66.72	2.6	50	YES
		CO 2	52.38	2	21.43	1	36.91	1.5	80	3	45.53	1.8	50	NO

		CO 3	61.91	3	35.71	1	48.81	2	80	3	55.05	2.2	50	YES
		CO 4	96.43	3	60.71	3	78.57	3	80	3	78.86	3	50	YES
15ECE344 Antenna Systems and Design	6	CO 1	66.67	3	42.42	2	54.55	2.5	86.37	3	60.91	2.6	50	YES
		CO 2	68.18	3	66.67	3	67.43	3	86.37	3	71.22	3	50	YES
		CO 3	100	3	45.45	2	72.73	2.5	86.37	3	75.46	2.6	50	YES
		CO 4	100	3	0	0	50	1.5	86.37	3	57.27	1.8	50	YES
15ECE339 Application of Linear Integrated Circuits	6	CO1	42.22	1	60	3	51.11	2	89.5	3	58.79	2.2	55	YES
		CO2	93.33	3	86.67	3	90	3	89.5	3	89.9	3	55	YES
		CO3	42.22	1	46.67	1	44.45	1	89.5	3	53.46	1.4	55	NO
		CO4	93.33	3	0	0	46.67	1.5	89.5	3	55.24	1.8	55	YES
15ECE386 VLSI Design Lab	6	CO1	39.29	1	34.06	1	38.24	1	84.71	3	47.53	1.4	60	NO
		CO2	39.29	1	34.06	1	38.24	1	84.71	3	47.53	1.4	60	NO
		CO3	58.24	2	34.06	1	53.4	1.8	84.71	3	59.66	2.04	60	NO
		CO4	58.24	2	34.06	1	53.4	1.8	84.71	3	59.66	2.04	60	NO
15ECE385 Digital Communication Lab	6	CO1	65.39	3	35.71	1	59.45	2.6	82.61	3	64.08	2.68	60	YES
		CO2	65.39	3	35.71	1	59.45	2.6	82.61	3	64.08	2.68	60	YES
		CO3	65.39	3	35.71	1	59.45	2.6	82.61	3	64.08	2.68	60	YES
		CO4	65.39	3	35.71	1	59.45	2.6	82.61	3	64.08	2.68	60	YES
15ECE387 Open Lab	6	CO1	67.03	3	84.06	3	70.44	3	81.1	3	72.57	3	60	YES
		CO2	67.03	3	84.06	3	70.44	3	81.1	3	72.57	3	60	YES
		CO3	67.03	3	84.06	3	70.44	3	81.1	3	72.57	3	60	YES
		CO4	0	0	84.06	3	16.81	0.6	81.1	3	29.67	1.08	60	NO
15SSK331 Soft Skills III	6	CO1	50	2	0	0	25	1	76.72	3	35.34	1.4	50	NO
		CO2	50	2	0	0	25	1	78.12	3	35.62	1.4	50	NO
		CO3	50	2	37.91	1	43.96	1.5	75.95	3	50.36	1.8	50	YES
		CO4	50	2	37.91	1	43.96	1.5	76.38	3	50.44	1.8	50	YES
		CO5	21.98	1	37.91	1	21.98	1	72.52	3	32.09	1.4	50	NO
		CO6	21.98	1	82.42	3	52.2	2	69.49	3	55.66	2.2	50	YES
15ECE401 Information Theory and Coding Techniques	7	CO1	70.56	3	29.44	1	50	2	81.04	3	56.21	2.2	50	YES
		CO2	85.84	3	92.78	3	89.31	3	80.91	3	87.63	3	50	YES
		CO3	63.89	3	61.66	3	62.78	3	79.44	3	66.11	3	50	YES

		CO4	73.89	3	45.55	2	59.72	2.5	80.03	3	63.78	2.6	50	YES
		CO5	97.78	3	75.55	3	86.67	3	79.35	3	85.21	3	50	YES
15ECE402 Radio Frequency Engineering	7	CO 1	61.94	3	67.78	3	64.86	3	84.8	3	68.85	3	50	YES
		CO 2	70.84	3	45.53	2	58.19	2.5	83.01	3	63.15	2.6	50	YES
		CO 3	77.78	3	63.3	3	70.54	3	83.06	3	73.04	3	50	YES
		CO 4	70	3	59.2	2	64.6	2.5	82.74	3	68.23	2.6	50	YES
15ENV300 Environmental Engineering	7	CO1	66.93	2.67	45.81	2	56.37	2.33	82	3	61.50	2.47	50	YES
		CO2	55.14	2	54.64	2.33	54.91	2.17	81.33	3	60.19	2.33	50	YES
		CO3	41.16	1.67	66.62	3	53.89	2.33	81.67	3	59.45	2.47	50	YES
		CO4	69.15	3	54.9	2.33	62.02	2.67	82	3	66.02	2.73	50	YES
15ECE345 Cellular and mobile communication system	7	CO1	54.55	2	75.76	3	65.16	2.5	92	3	70.53	2.6	50	YES
		CO2	74.75	3	66.67	3	70.71	3	92	3	74.97	3	50	YES
		CO3	69.7	3	33.33	1	51.52	2	92	3	59.62	2.2	50	YES
		CO4	100	3	57.58	2	78.79	2.5	92	3	81.43	2.6	50	YES
15ECE359 Wireless communication	7	CO1	82.61	3	47.83	2	65.22	2.5	90.02	3	70.18	2.6	50	YES
		CO2	74.64	3	54.35	2	64.5	2.5	90.02	3	69.6	2.6	50	YES
		CO3	84.79	3	47.83	2	66.31	2.5	90.02	3	71.05	2.6	50	YES
		CO4	89.13	3	39.13	1	64.13	2	90.02	3	69.31	2.2	50	YES
15MEC333 Financial management	7	CO1	39.93	1	36.63	1	38.28	1	92.53	3	49.13	1.4	50	NO
		CO2	42.9	2	30.69	1	36.8	1.5	92.53	3	47.95	1.8	50	NO
		CO3	51.98	2	49.5	2	50.74	2	92.53	3	59.1	2.2	50	YES
		CO4	49.51	2	22.77	1	36.14	1.5	92.53	3	47.42	1.8	50	NO
		CO5	42.24	2	15.84	1	29.04	1.5	92.53	3	41.74	1.8	50	NO
15ECE331 Pattern recognition techniques and algorithms	7	CO1	44.79	2	64.58	3	54.69	2.5	81.6	3	60.07	2.6	50	YES
		CO2	53.47	2	56.25	2	54.86	2	80.8	3	60.05	2.2	50	YES
		CO3	74.3	3	60.42	3	67.36	3	78.4	3	69.57	3	50	YES
		CO4	83.33	3	66.67	3	75	3	80	3	76	3	50	YES
15ECE366 Embedded systems	7	CO1	75	3	75	3	75	3	88	3	77.6	3	50	YES
		CO2	66.18	3	76.47	3	71.33	3	87	3	74.46	3	50	YES
		CO3	74.27	3	73.53	3	73.9	3	84	3	75.92	3	50	YES
		CO4	88.24	3	10.29	1	49.27	2	85	3	56.42	2.2	50	YES

		CO5	94.12	3	16.18	1	55.15	2	89	3	61.92	2.2	50	YES
15ECE368 Introduction to soft computing	7	CO1	61.91	3	46.03	2	53.97	2.5	86.4	3	60.46	2.6	50	YES
		CO2	66.67	3	79.37	3	73.02	3	84.8	3	75.38	3	50	YES
		CO3	95.24	3	41.27	2	68.26	2.5	85	3	71.61	2.6	50	YES
		CO4	95.24	3	28.57	1	61.91	2	81.2	3	65.77	2.2	50	YES
		CO5	95.24	3	0	0	47.62	1.5	81	3	54.3	1.8	50	YES
15ECE481 Microwave Engineering Lab	7	CO 1	59.17	2	33.89	1	54.11	1.8	88.12	3	60.91	2.04	60	YES
		CO 2	59.17	2	33.89	1	54.11	1.8	86.13	3	60.51	2.04	60	YES
		CO 3	59.17	2	33.89	1	54.11	1.8	85.33	3	60.35	2.04	60	YES
		CO 4	59.17	2	33.89	1	54.11	1.8	87.93	3	60.87	2.04	60	YES
15ECE495 Project Phase I	7	CO 1	42.78	2	29.44	1	37.44	1.6	85.65	3	47.08	1.88	60	NO
		CO 2	42.78	2	29.44	1	37.44	1.6	84.93	3	46.94	1.88	60	NO
		CO 3	42.78	2	29.44	1	37.44	1.6	84.84	3	46.92	1.88	60	NO
		CO 4	0	0	29.44	1	11.78	0.4	84.05	3	26.23	0.92	60	NO
15ECE347 Introduction to Radar Systems	8	CO 1	78.95	3	89.47	3	84.21	3	85.5	3	84.47	3	50	YES
		CO 2	85.97	3	73.68	3	79.83	3	86.75	3	81.21	3	50	YES
		CO 3	71.06	3	73.68	3	72.37	3	85.5	3	75	3	50	YES
		CO 4	71.06	3	73.68	3	72.37	3	85.5	3	75	3	50	YES
15ECE369 Principles of VLSI Testing	8	CO1	83.34	3	100	3	91.67	3	93.5	3	92.04	3	50	YES
		CO2	96.83	3	100	3	98.42	3	90.75	3	96.89	3	50	YES
		CO3	90.48	3	80.95	3	85.72	3	92	3	86.98	3	50	YES
		CO4	61.9	3	95.24	3	78.57	3	90.75	3	81.01	3	50	YES
15ECE380 Telecommunication Management	8	CO1	87.63	3	77.42	3	82.53	3	81.25	3	82.27	3	50	YES
		CO2	79.57	3	91.94	3	85.76	3	81.25	3	84.86	3	50	YES
		CO3	87.1	3	75.81	3	81.46	3	78	3	80.77	3	50	YES
		CO4	83.07	3	85.48	3	84.28	3	79.5	3	83.32	3	50	YES
		CO5	71.78	3	6.45	1	39.12	2	80	3	47.3	2.2	50	NO
15MEC411 Operation Research	8	CO1	65.91	3	45.45	2	55.68	2.5	80	3	60.54	2.6	50	YES
		CO2	71.21	3	74.24	3	72.73	3	80	3	74.18	3	50	YES
		CO3	67.43	3	56.06	2	61.75	2.5	80	3	65.4	2.6	50	YES
		CO4	96.97	3	43.94	2	70.46	2.5	80	3	72.37	2.6	50	YES

		CO5	96.97	3	65.15	3	81.06	3	80	3	80.85	3	50	YES
15ECE371 VLSI Fabrication Technology	8	CO1	78.34	3	63.33	3	70.84	3	82	3	73.07	3	50	YES
		CO2	68.89	3	40	2	54.45	2.5	77.5	3	59.06	2.6	50	YES
		CO3	80	3	60	3	70	3	78.25	3	71.65	3	50	YES
		CO4	96.67	3	76.67	3	86.67	3	77.5	3	84.84	3	50	YES
15ECE374 Automotive Embedded Systems	8	CO1	63.49	3	30.95	1	47.22	2	85	3	54.78	2.2	50	YES
		CO2	64.29	3	21.43	1	42.86	2	89	3	52.09	2.2	50	YES
		CO3	72.62	3	38.1	1	55.36	2	78	3	59.89	2.2	50	YES
		CO4	97.62	3	59.52	2	78.57	2.5	79	3	78.66	2.6	50	YES
15ECE499 Project Phase II	8	CO1	45.56	2	61.67	3	52	2.4	78.44	3	57.29	2.52	60	NO
		CO2	45.56	2	61.67	3	52	2.4	77.34	3	57.07	2.52	60	NO
		CO3	54.45	2	61.67	3	57.34	2.4	78.92	3	61.66	2.52	60	YES
		CO4	0	0	61.67	3	61.67	1.2	78.09	3	64.95	1.56	60	YES

3.3 Attainment of Program Outcomes and Program Specific Outcomes (75) Total Marks 75.00

3.3.1 Describe assessment tools and processes used for measuring the attainment of each Program Outcome and Program Specific Outcomes (10) Institute Marks : 10.00

Attainment of Program Outcomes and Program Specific Outcomes

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

Assessment involves both direct and indirect methods (summarized in the figure 3.3.1).

In the direct method the attainment is a weighted average of the CO attainment levels of the course processed using CAM of the course. If a particular CO is not attained for the course its contribution is not considered. The same process is done for all the courses and the overall PO and PSO attainment for each batch is evaluated as a simple average. Indirect method is based on surveys.

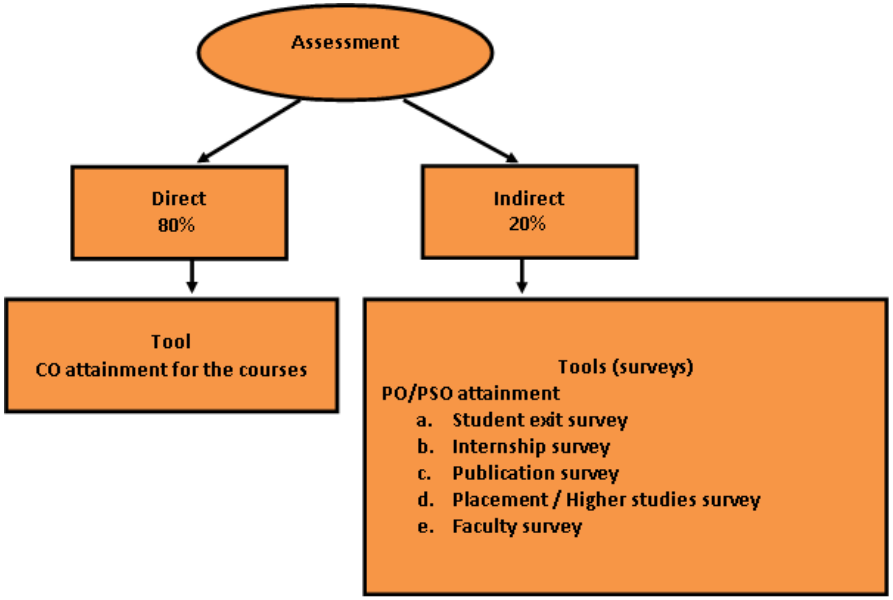


Figure 3.3.1 Summary of the PO/PSO assessment

Formulas used for calculation of PO/PSO attainment

Direct	$PO_{ip} = \frac{\sum_{k=1}^{N} CA_k * CAM_{ik} * CAI_k}{\sum_{k=1}^{N} CAM_{ik} * CAI_k}$ Where PO_{ip} is the attainment of i^{th} PO for the p^{th}subject Below the terms are defined for the p^{th} subject N is the number of CO's CA_k is the CO attainment level of the k^{th} CO CAM_{ik} is the 'correlation' level of the k^{th} CO with the i^{th} PO CAI_k is the CO attainment index of the k^{th} CO CAI_k=0 if CO attainment % < target =1 if CO attainment % ≥ target $PODirect_i = \frac{\sum_{p=1}^{M} PO_{ip}}{Q}$ Where $PODirect_i$ the direct attainment of i^{th} PO Where PO_{ip} is the attainment of i^{th} PO for the p^{th} subject p is the index of the subject for which the PO_i is relevant M is the maximum index number of such subjects Q is the number of such subjects
Indirect	$PO_{iz} = \frac{3 * \sum_{p=1}^{M} PO_{ip}}{5 * Q}$ PO_{iz} is the attainment of i^{th} PO from the z^{th}survey PO_{ip} is therating given by the p^{th} respondent on a scale of 1 to 5 for attainment of i^{th} PO p is the index of the respondent M is the maximum index number of such respondents Q is the total number of such respondents

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

Institute Marks : 65.00

PO Attainment

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ENG111	PO1	PO2	PO3	PO4	PO5	PO6	PO7	2.95	2.95	2.95	PO11	2.95
15MAT111	2.95	2.95	2.95	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.95
15CSE100	3	3	3	PO4	3	PO6	PO7	3	3	3	PO11	PO12
15PHY100	2.61	2.61	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.61
15PHY181	2.99	2.99	2.99	2.99	2.99	2.99	PO7	PO8	PO9	PO10	PO11	PO12
15MEC180	2.57	2.57	2.57	PO4	2.57	PO6	PO7	PO8	2.57	2.57	PO11	2.57
15MEC100	2.71	2.71	2.71	2.71	PO5	2.71	PO7	PO8	PO9	2.71	PO11	2.71
15CUL101	PO1	PO2	PO3	PO4	PO5	2.63	2.63	2.63	2.63	2.63	2.63	2.63
15MAT121	2.41	2.39	2.39	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.42
15CHY100	2.58	2.60	2.60	2.60	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CSE102	2.27	2.27	2.27	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE112	2.23	2.17	2.22	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CHY181	2.78	2.78	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15EEE180	2.39	2.39	2.39	PO4	PO5	PO6	PO7	2.39	2.39	2.39	PO11	2.39

15CSE180	2.05	2.03	2.05	PO4	2.15	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15CUL111	PO1	PO2	PO3	PO4	PO5	2.50	2.50	2.50	2.50	2.50	2.50	2.50
15ECE201	2.86	2.75	3	2.67	PO5	PO6	PO7	PO8	2	2	PO11	2
15ECE202	2.8	2.63	2.67	3	PO5	PO6	PO7	PO8	3	3	3	3
15ECE203	2.5	2.63	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.5
15ECE204	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15MAT202	2.23	2.23	PO3	PO4	2	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15MAL101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15HIN101	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	2	3	PO11	PO12
15ECE282	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3
15AVP201	PO1	PO2	PO3	PO4	PO5	3	2	3	3	3	PO11	3
15ECE211	2.77	3	2.67	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.8
15ECE212	3	3	3	3	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE213	2.25	2.33	2	2.33	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15MAT213	2.16	2.16	2.17	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.16
15ENG233	PO1	PO2	PO3	3	PO5	PO6	PO7	PO8	3	3	PO11	PO12
15ECE286	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3
15SSK211	PO1	3	PO3	3	PO5	PO6	PO7	2	2.38	2.6	PO11	2.6
15AVP211	PO1	PO2	PO3	PO4	PO5	3	3	3	3	2	PO11	3
15ECE301	2	2	2	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15ECE302	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3
15ECE304	2.25	2.25	2	2	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2
15MAT303	2.6	2.6	2.6	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.6
15ECE303	2.85	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.8
15ECE382	3	3	3	PO4	PO5	PO6	PO7	PO8	3	3	PO11	3
15SSK301	PO1	2	PO3	2	PO5	PO6	PO7	PO8	2.5	2.4	2	2.43
15ECE311	2.25	2.25	2	2	2	2	PO7	PO8	2	2	PO11	2.25
15ECE313	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE314	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12

15ECE367	3	3	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE356	2.67	2.67	0	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE344	2.75	2.8	2.73	PO4	PO5	PO6	PO7	PO8	2	2	PO11	2.75
15ECE339	2.33	0	0	PO4	2.22	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE385	2	2	2	PO4	2	PO6	PO7	PO8	2	2	PO11	2
15ECE386	0	0	PO3	PO4	0	PO6	PO7	PO8	PO9	PO10	PO11	0
15ECE387	3	3	3	0	3	3	3	3	3	3	3	3
15SSK311	PO1	2	PO3	0	PO5	PO6	PO7	0	0	0	PO11	0
15ECE401	2.8	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.8
15ECE402	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ENV300	2.33	2.47	2.33	2.47	PO5	2.47	2.50	2.63	2.47	2.50	PO11	2.50
15ECE345	2.73	2.67	2.67	PO4	2.5	3	PO7	PO8	3	3	2.5	2.67
15ECE359	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15MEC333	PO1	PO2	PO3	PO4	PO5	2	PO7	2	PO9	2	2	0
15ECE331	3	3	3	3	3	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE481	3	3	3	3	3	PO6	PO7	PO8	3	3	PO11	3
15ECE495	0	0	0	0	0	0	0	0	0	0	0	0
15ECE380	3	3	PO3	3	3	PO6	PO7	PO8	0	0	0	PO12
15ECE368	2.8	2.77	2.7	2.75	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE374	2	2	2.6	PO4	3	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15ECE347	3	3	PO3	3	PO5	PO6	PO7	PO8	PO9	3	PO11	3
15ECE369	2.75	2.8	2.75	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.75
15ECE499	3	3	3	3	3	3	3	3	3	3	3	3
15ECE366	2.8	2.75	2.71	2.67	2.71	3	PO7	PO8	3	3	PO11	PO12
15ECE111	2.57	2.6	3	2.75	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3
15ECE281	3	3	3	PO4	PO5	PO6	PO7	PO8	3	3	PO11	3
15ECE285	3	3	3	PO4	3	PO6	PO7	PO8	3	3	PO11	3
15ECE381	0	0	PO3	PO4	PO5	PO6	PO7	PO8	0	0	PO11	PO12
15ECE312	2.5	2.5	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	2.5

15MEC411	3	3	3	PO4	PO5	PO6	PO7	PO8	PO9	3	3	3
15ECE371	2.75	3	3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	3

PO Attainment Indirect

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Student Exi	2.13	2.1	2.08	1.98	2.12	2.16	2.17	2.15	2.27	2.22	2.2	2.04
Publication	2.92	2.86	2.92	2.92	2.92	2.4	2.2	2.4	2.77	2.89	2.29	2.6
Placement /	2.4	2.4	1.8	3	2.4	1.8	1.8	3	2.4	2.4	3	2.4
Internship s	2.4	2.3	2.3	1.3	2	2.1	1.5	1.6	2.5	2.37	2.01	2.07
Faculty surv	2.9	2.54	2.41	2.17	2.52	2.4	2.4	2.33	2.32	2.32	2.21	2.39

PO Attainment Level

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
Direct Attainment	2.72	2.63	2.75	2.47	2.5	2.74	2.50	2.63	2.74	2.75	2.5	2.74
InDirect Attainment	2.55	2.44	2.30	2.27	2.39	2.17	2.01	2.30	2.45	2.44	2.34	2.30

PSO Attainment

Course	PSO1	PSO2
15AVP201	PSO1	PSO2
15AVP211	PSO1	PSO2
15CHY100	PSO1	PSO2
15CHY181	PSO1	PSO2
15CSE100	PSO1	PSO2
15CSE102	PSO1	PSO2
15CSE180	PSO1	PSO2
15CUL101	PSO1	PSO2
15CUL111	PSO1	PSO2
15ECE112	2.2	PSO2
15ECE201	2.8	2.8
15ECE202	2.8	PSO2
15ECE203	2.5	PSO2

15ECE204	3	PSO2
15ECE211	2.77	PSO2
15ECE212	3	3
15ECE213	2.25	2.25
15ECE282	3	3
15ECE286	3	PSO2
15ECE301	2	PSO2
15ECE302	3	3
15ECE303	2.85	PSO2
15ECE304	2	PSO2
15ECE311	2.25	PSO2
15ECE312	2.5	3
15ECE313	3	3
15ECE314	3	PSO2
15ECE331	3	3
15ECE339	2.25	PSO2
15ECE344	2.73	2.73
15ECE345	2.75	PSO2
15ECE356	2.67	3
15ECE359	3	3
15ECE366	2.67	3
15ECE367	3	3
15ECE368	2.8	2.6
15ECE371	2.73	PSO2
15ECE374	2.3	2.6
15ECE380	3	PSO2
15ECE381	0	PSO2
15ECE382	3	3
15ECE385	2	PSO2
15ECE387	3	3

15ECE401	2.8	2.8
15ECE402	3	3
15ECE481	3	PSO2
15ECE495	0	0
15ECE499	3	3
15EEE180	PSO1	PSO2
15ENG111	PSO1	PSO2
15ENG233	PSO1	PSO2
15ENV300	PSO1	PSO2
15HIN101	PSO1	PSO2
15MAL101	PSO1	PSO2
15MAT111	PSO1	PSO2
15MAT121	PSO1	PSO2
15MAT202	PSO1	PSO2
15MAT303	PSO1	PSO2
15MEC100	PSO1	PSO2
15MEC180	PSO1	PSO2
15MEC333	PSO1	PSO2
15PHY100	PSO1	PSO2
15PHY181	PSO1	PSO2
15SSK211	PSO1	PSO2
15SSK301	PSO1	PSO2
15SSK311	PSO1	PSO2
15ECE347	3	3
15ECE369	2.75	PSO2
15ECE111	2.6	2.75
15ECE386	0	0
15ECE281	3	3
15ECE285	3	3
15MAT213	2.2	PSO2

15MEC411	3	0

PSO Attainment Indirect

Survey	PSO1	PSO2
Student Exit survey	2.11	2.05
Publication survey	2.92	2.74
Placement /higher stud	2.4	2.4
Internship survey	2.13	1.4
Faculty survey	2.41	2.25

PSO Attainment Level

Course	PSO1	PSO2
Direct Attainment	2.65	2.75
InDirect Attainment	2.39	2.17

4 STUDENTS' PERFORMANCE (100)

Total Marks 92.22

Institute Marks :

Table 4.1

Item (Information to be provided cumulatively for all the shifts with explicit headings, wherever applicable)	2019-20 (CAY)	2018-19 (CAYm1)	2017-18 (CAYm2)	2016-17 (CAYm3)	2015-16 (CAYm4)	2014-15 (CAYm5)	2013-14 (CAYm6)
Sanctioned intake of the program(N)	180	180	240	180	180	180	180
Total number of students admitted in first year minus number of students migrated to other programs/ institutions plus No. of students migrated to this program (N1)	178	206	262	197	181	173	199
Number of students admitted in 2nd year in the same batch via lateral entry (N2)	0	0	0	0	0	0	0
Separate division students, If applicable (N3)	0	0	0	0	0	0	0
Total number of students admitted in the programme(N1 + N2 + N3)	178	206	262	197	181	173	199

Table 4.2

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	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
2019-20 (CAY)	178				
2018-19 (CAYm1)	206	176			
2017-18 (CAYm2)	262	222	192		
2016-17 (CAYm3)	197	172	147	142	
2015-16 (LYG)	181	132	114	104	102
2014-15 (LYGm1)	173	139	136	132	132
2013-14 (LYGm2)	199	140	136	133	132

Table 4.3

Year of entry	Total No of students admitted in the program (N1 + N2 + N3)	Number of students who have successfully graduated in stipulated period of study) [Total of with Backlog + without Backlog]			
		I year	II year	III year	IV year
2019-20 (CAY)	178				
2018-19 (CAYm1)	206	206			
2017-18 (CAYm2)	262	262	262		
2016-17 (CAYm3)	197	197	197	197	
2015-16 (LYG)	181	181	181	181	156
2014-15 (LYGm1)	173	173	173	173	164
2013-14 (LYGm2)	199	199	199	199	144

4.1 Enrolment Ratio (20) Total Marks 20.00

Institute Marks : 20.00

	N (From Table 4.1)	N1 (From Table 4.1)	Enrollment Ratio [(N1/N)*100]
2019-20 (CAY)	180	178	98.89
2018-19 (CAYm1)	180	206	114.44
2017-18 (CAYm2)	240	262	109.17

Average [(ER1 + ER2 + ER3) / 3] : 107.50

Assessment : 20.00

4.2 Success Rate in the stipulated period of the program (20) Total Marks 14.12

4.2.1 Success rate without backlogs in any semester / year of study (15) Institute Marks : 9.90

Item	Latest Year of Graduation, LYG (2015-16)	Latest Year of Graduation minus 1, LYGm1 (2014-15)	Latest Year of Graduation minus 2 LYGm2 (2013-14)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	181.00	173.00	199.00
Y Number of students who have graduated without backlogs in the stipulated period	102.00	132.00	132.00
Success Index [SI = Y / X]	0.56	0.76	0.66

Average SI [(SI1 + SI2 + SI3) / 3] : 0.66

Assessment [15 * Average SI] : 9.90

4.2.2 Sucess rate in stipulated period (5) Institute Marks : 4.22

Item	Latest Year of Graduation, LYG (2015-16)	Latest Year of Graduation minus 1, LYGm1 (2014-15)	Latest Year of Graduation minus 2 LYGm2 (2013-14)
X Number of students admitted in the corresponding First year + admitted in 2nd year via lateral entry and seperated division, if applicable	181.00	173.00	199.00
Y Number of students who have graduated in the stipulated period	156.00	164.00	144.00
Success Index [SI = Y / X]	0.86	0.95	0.72

Average SI[(SI1 + SI2 + SI3) / 3]: 0.84

Assessment [5 * Average SI] : 4.22

Note : If 100% students clear without any backlog then also total marks scored will be 40 as both 4.2.1 & 4.2.2 will be applicable simultaneously.

4.3 Academic Performance in Second Year (10) Total Marks 10.00

Institute Marks : 10.00

Academic Performance	CAYm2 (2017-18)	CAYm3 (2016-17)	LYG (2015-16)
Mean of CGPA or mean percentage of all successful students(X)	6.16	7.95	7.85
Total number of successful students (Y)	262.00	197.00	181.00
Total number of students appeared in the examination (Z)	262.00	197.00	181.00
API [X * (Y/Z)]	6.16	7.95	7.85

Average API [(AP1 + AP2 + AP3)/3] : 7.32

Assessment [1.5 * AverageAPI] : 10.98

4.4 Placement, Higher Studies and Entrepreneurship (30) Total Marks 28.10

Institute Marks : 28.10

Item	LYG(2015-16)	LYGm1(2014-15)	LYGm2(2013-14)
Total No of Final Year Students(N)	181.00	173.00	199.00
No of students placed in the companies or goverment sector(X)	150.00	135.00	123.00
No of students admitted to higher studies with valid qualifying scores(GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y)	31.00	38.00	39.00
No of students turned enterpreneur in engineering/technology (Z)	0.00	0.00	0.00
Placement Index [(X+Y+Z)/N] :	1.00	1.00	0.81

Average Placement [(P1 + P2 + P3)/3] : 0.94

Assessment [30 * Average Placement] : 28.10

Program Name : Electronics & Communication Engg.
Assessment Year : 2018-19 (CAYm1)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Aakash Nandakumar	CBENU4ECE15001	FreshWorks	Date: Fri, 17-08-2018
2	Aiswarya K V	CBENU4ECE15003	Robert Bosch	Date: August 8, 2018
3	Anandh S	CBENU4ECE15004	TCS	Date: Sept 17, 2018
4	Anish M	CBENU4ECE15005	TCS	Date: Sept 17, 2018
5	Arul Selvam S	CBENU4ECE15006	Infosys	Dt.: September 15, 2018
6	Arun Karthik K	CBENU4ECE15007	Accenture	24th Oct 2018
7	Arun Raj A	CBENU4ECE15008	Infosys	Dt.: September 15, 2018
8	Azhaginiyan S.	CBENU4ECE15011	Ericsson	Dt.: Apr 5, 2019
9	Balavignesh A	CBENU4ECE15012	Cognizant	Date: Sep 19, 2018
10	Bhavinaya K B	CBENU4ECE15013	Infosys	Dt.: September 15, 2018
11	Chandolu Yeshwanth Sai Vivek	CBENU4ECE15014	HGS Business Transformation	Date: 16 April 2019
12	Chetas Anand	CBENU4ECE15015	Infosys	Dt.: September 15, 2018
13	Dheepadharshani S	CBENU4ECE15016	Mu Sigma	Date: July 23, 2018
14	Edumudi Sai Karteek	CBENU4ECE15017	Infosys	Dt.: September 15, 2018
15	Gundabattula Naga Rama Mangaiah Naidu	CBENU4ECE15019	HGS Business Transformation	Date: 16 April 2019
16	Hanumalasetty Rakesh Babu	CBENU4ECE15020	Infosys	Dt.: September 15, 2018
17	Jananika R	CBENU4ECE15021	Continental	Date: 10/09/2018
18	Kalaiarasi K	CBENU4ECE15022	Accenture	24th Oct 2018

19	Kavya D.	CBENU4ECE15026	TCS	Date: Sept 17, 2018
20	Koushik S	CBENU4ECE15030	Accenture	24th Oct 2018
21	Maddi Naga Satya Surya Chakra Sai Krishna	CBENU4ECE15032	Robert Bosch	Date: August 8, 2018
22	Monesh Karthikkeyan B A	CBENU4ECE15034	Robert Bosch	Date: August 8, 2018
23	Mouli K	CBENU4ECE15035	Ericsson	Dt.: Apr 5, 2019
24	Mrinal Sharma S	CBENU4ECE15036	TCS	Date: Sept 17, 2018
25	Mugesh R	CBENU4ECE15037	Cognizant	Date: Sep 19, 2018
26	Mukund S Chettiar	CBENU4ECE15038	Soliton	Date: 11th July 2018
27	S Nandhini	CBENU4ECE15039	Ericsson	Dt.: Apr 5, 2019
28	Naveen Balachandran	CBENU4ECE15040	Wipro	Date: October 30, 2018
29	Parasuraman Balaji	CBENU4ECE15041	Continental	Date: 10/09/2018
30	Partho Sarothi Dey	CBENU4ECE15042	Robert Bosch	Date: August 8, 2018
31	Pedapudi Sandeeptha	CBENU4ECE15043	TCS	Date: Sept 17, 2018
32	V. Prahannathan	CBENU4ECE15044	Soliton	Date: 11th July 2018
33	Preethi J S	CBENU4ECE15045	Accenture	24th Oct 2018
34	Premnath S	CBENU4ECE15046	Robert Bosch	Date: August 8, 2018
35	T N Rahul Reddy	CBENU4ECE15047	Continental	Date: 10/09/2018
36	Sachin S	CBENU4ECE15049	Mu Sigma	Date: July 23, 2018
37	Sanchana M	CBENU4ECE15050	Accenture	24th Oct 2018
38	Saravanan K	CBENU4ECE15051	Robert Bosch	Date: August 8, 2018
39	Shivaranjan Menon K	CBENU4ECE15053	Robert Bosch	Date: August 8, 2018
40	Shrinidhi J	CBENU4ECE15054	Robert Bosch	Date: August 8, 2018
41	Vallabhapurapu Naveen Sreeram	CBENU4ECE15058	Infosys	Dt.: September 15, 2018
42	Vamsi Krishna M	CBENU4ECE15059	TCS	Date: Sept 17, 2018
43	Yashank Fomra R	CBENU4ECE15061	Oracle Solution Engg	Dt: Dec 26, 2018
44	U Adithya Bharadwaj	CBENU4ECE15102	Latent View	Date: August 13, 2018
45	Akash F	CBENU4ECE15104	Accenture	24th Oct 2018
46	Annapoorani S	CBENU4ECE15106	TCS	Date: Sept 17, 2018
47	Aparna P	CBENU4ECE15107	Robert Bosch	Date: August 8, 2018
48	V S Atheendran	CBENU4ECE15109	FreshWorks	Date: Fri, 17-08-2018
49	Baddigam Naveen Reddy	CBENU4ECE15110	Accenture	24th Oct 2018

50	Chandrashekar Krishnan	CBENU4ECE15112	Robert Bosch	Date: August 8, 2018
51	Chennupati Pratibha	CBENU4ECE15114	Continental	Date: 10/09/2018
52	Guru Prasath C	CBENU4ECE15119	Cognizant	Date: Sep 19, 2018
53	Harshini R	CBENU4ECE15121	Infosys	Dt.: September 15, 2018
54	Hemadharani M	CBENU4ECE15122	Accenture	24th Oct 2018
55	Hemanth Kumaar M J	CBENU4ECE15123	Accenture	24th Oct 2018
56	Ikram Shah V	CBENU4ECE15124	GE Digital	Date: July 28, 2018
57	R Indhu	CBENU4ECE15125	Tally Solutions	Date: 24th July 2018
58	Kapa Venkata Sai Hemanth Reddy	CBENU4ECE15126	Accenture	24th Oct 2018
59	Khokalay Ujwal Kumar	CBENU4ECE15129	Accenture	24th Oct 2018
60	Kovvuri Manish Reddy	CBENU4ECE15131	Cognizant	Date: Sep 19, 2018
61	Madhumithaa S P M	CBENU4ECE15134	FreshWorks	Date: Fri, 17-08-2018
62	Mothiki Sai Harshith	CBENU4ECE15135	HCL Technologies	Date: December 20, 2018
63	Navin Baaskar E V	CBENU4ECE15137	Infosys	Dt.: September 15, 2018
64	Nikhil Menon	CBENU4ECE15138	Cognizant	Date: Sep 19, 2018
65	Pavithra S	CBENU4ECE15140	Cognizant	Date: Sep 19, 2018
66	Raghu Nathan S	CBENU4ECE15141	Cisco	15th March 2019
67	CH Ramakrishna Prabhu	CBENU4ECE15142	Accenture	24th Oct 2018
68	Rohan Sriram	CBENU4ECE15143	Infosys	Dt.: September 15, 2018
69	Sai Naveen Kumar Ravela	CBENU4ECE15147	Ericsson	Dt.: Apr 5, 2019
70	V Sharan	CBENU4ECE15149	Continental	Date: 10/09/2018
71	Shreekesh M	CBENU4ECE15150	Cognizant	Date: Sep 19, 2018
72	Sivapradhayni A	CBENU4ECE15152	Cognizant	Date: Sep 19, 2018
73	T Sooryaa Vignesh	CBENU4ECE15153	Robert Bosch	Date: August 8, 2018
74	Sripathi Eswar	CBENU4ECE15155	Cognizant	Date: Sep 19, 2018
75	Sruthi A	CBENU4ECE15156	Cognizant	Date: Sep 19, 2018
76	S Subhash Chandran	CBENU4ECE15157	Mitsogo Technologies	Date: December 11, 2018
77	Vayalapalli Jaya Sampath	CBENU4ECE15159	Infosys	Dt.: September 15, 2018
78	Vikrant Narayan M	CBENU4ECE15160	Infosys-SES	HRD/3B/19-20/12676828
79	Vutukuru Venkata Aditya Tulasi Das	CBENU4ECE15161	Cognizant	Date: Sep 19, 2018
80	Aarthi A	CBENU4ECE15201	Cognizant	Date: Sep 19, 2018

81	Adarsh Krishna	CBENU4ECE15202	Tata Elxsi	Date: 21st Dec 2018
82	Amara Venkata Pavan Kumar	CBENU4ECE15203	Continental	Date: 10/09/2018
83	Avinash J	CBENU4ECE15207	Oracle	Date: 30th July 2018
84	Bharathi S	CBENU4ECE15209	Cognizant	Date: Sep 19, 2018
85	Chitibomma Meghana	CBENU4ECE15210	Cognizant	Date: Sep 19, 2018
86	Chunduri Narasimha Kumar	CBENU4ECE15211	Oracle Solution Engg	Dt: Dec 26, 2018
87	Datha Deepthika Venna	CBENU4ECE15213	Robert Bosch	Date: August 8, 2018
88	Debapriya Das	CBENU4ECE15214	Mu Sigma	Date: July 23, 2018
89	Hemaanand M	CBENU4ECE15219	Infosys-SES	HRD/3B/19-20/12676828
90	Khowshik S	CBENU4ECE15222	TCS	Date: Sept 17, 2018
91	Koushikeshwaran B	CBENU4ECE15223	Infosys	Dt.: September 15, 2018
92	Krishna Prasad M	CBENU4ECE15224	Accenture	24th Oct 2018
93	S Loyola Samraj	CBENU4ECE15227	Cisco	15th March 2019
94	Nisha V Bhalke	CBENU4ECE15231	Latent View	Date: August 13, 2018
95	Penugonda Vamsi Gupta	CBENU4ECE15232	Robert Bosch	Date: August 8, 2018
96	Polina Rakesh Chowdary	CBENU4ECE15233	Ericsson	Dt.: Apr 5, 2019
97	G. Pradeep	CBENU4ECE15234	Infosys	Dt.: September 15, 2018
98	Priyadarsini G	CBENU4ECE15235	Cognizant	Date: Sep 19, 2018
99	Raghul S	CBENU4ECE15238	Accenture	24th Oct 2018
100	M Rohith Kumar	CBENU4ECE15240	Cognizant	Date: Sep 19, 2018
101	Sethumathavan P K	CBENU4ECE15243	TCS	Date: Sept 17, 2018
102	V Shanmuga Suriya	CBENU4ECE15244	HCL Technologies	Date: December 20, 2018
103	Shilpa L R	CBENU4ECE15245	Cognizant	Date: Sep 19, 2018
104	Sindhura Maddineni	CBENU4ECE15248	Ericsson	Dt.: Apr 5, 2019
105	Sneha Sivarama Krishnan	CBENU4ECE15249	Ericsson	Dt.: Apr 5, 2019
106	Somarowthu Jhosrikar	CBENU4ECE15250	Eduvirtuoso	Date: 5th March 2019
107	Srivari Krishna R	CBENU4ECE15253	Hyundai Mobis	Date: September 10, 2018
108	Suseendiran S	CBENU4ECE15254	Quest Global	Date: 23rd March 2019
109	Swathika S	CBENU4ECE15255	Oracle	Date: 30th July 2018
110	Vedhanarayanan M	CBENU4ECE15257	Continental	Date: 10/09/2018
111	Vigneshwaran M	CBENU4ECE15258	Accenture	24th Oct 2018

112	Yaddanapudi Akhileswar	CBENU4ECE15261	Infosys-SES	HRD/3B/19-20/12676828
113	Arathi T J	CBENU4ECE15501	Accenture	24th Oct 2018
114	Rakshita Vishali V	CBENU4ECE15512	Robert Bosch	Date: August 8, 2018
115	C V N S Lalitha	CBENU4ECE15513	Hyundai Mobis	Date: September 10, 2018
116	S Smruthi	CBENU4ECE15521	HSBC	Dt: October 11, 2018
117	Madhumitha S	CBENU4ECE15522	BRIDGEi2i Analytics Solutions	Dt. 02 August 2018
118	J Pavanitha	CBENU4ECE15523	Cognizant	Date: Sep 19, 2018

Assessment Year : 2017-18 (CAYm2)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	ABHIRAM H	CBENU4ECE14002	Cognizant	Date: 30th Jan 2018
2	ADITYAN SEN NALUMAKKAL	CBENU4ECE14003	Accenture	Date : OCT 6 ,2017
3	AJAY KRISHNA M	CBENU4ECE14004	Mu Sigma	Date : July 17, 2017
4	AKILA L	CBENU4ECE14005	Accenture	Date : OCT 6 ,2017
5	AKSHAY RAVIKUMAR	CBENU4ECE14006	Infosys	Date : Sep 11, 2017
6	AKSHAYA C	CBENU4ECE14007	Robert Bosch	Date : Jul 25, 2017
7	ANBUCHELVI M	CBENU4ECE14009	Accenture	Date : OCT 6 ,2017
8	B BIBASWAN KAR	CBENU4ECE14015	INTEL	Date : 20 Jun 2018
9	GOWTHAM R	CBENU4ECE14020	TCS	Date: Sep 24, 2017
10	GUNTUPALLI KRISHNA VAMSI	CBENU4ECE14021	TCS	Date: Sep 24, 2017
11	HARIPRIYA L	CBENU4ECE14023	Accenture	Date : OCT 6 ,2017
12	JEFFY JOSEPH	CBENU4ECE14024	Oracle	Date : March 14 , 2018
13	KOPPURAVURI VENKATA DURGA NARENDRA KUMAR	CBENU4ECE14026	Infosys	Date : Sep 11, 2017
14	MACHIREDDY SURYAVAMSI REDDY	CBENU4ECE14027	Continental AG	Date : 13/12/2017
15	NACHIKET VENKAT	CBENU4ECE14029	Robert Bosch	Date : Jul 25, 2017
16	NARAYANAM SAI SRINIVAS MURTHY	CBENU4ECE14030	Robert Bosch	Date : Jul 25, 2017
17	NATHANI JASWANTH SAI	CBENU4ECE14031	Accenture	Date : OCT 6 ,2017
18	NEELEMA GOPINATH	CBENU4ECE14032	Accenture	Date : OCT 6 ,2017
19	PANTA SUSHMANTH REDDY	CBENU4ECE14033	Infosys	Date : Sep 11, 2017
20	PATNAIKUNI ROHIT	CBENU4ECE14034	Federal Bank	Date: Jul 3 , 2018
21	POLAMARASETTY SAI SUNEEL	CBENU4ECE14035	TCS	Date: Sep 24, 2017
22	PONNURU VENKATA SAI JAYA KRISHNA	CBENU4ECE14036	Accenture	Date : OCT 6 ,2017

23	POOJA GANESH	CBENU4ECE14037	Accenture	Date : OCT 6 ,2017
24	PRANEETH BANDARU	CBENU4ECE14040	TCS	Date: Sep 24, 2017
25	RAHUL BALAKRISHNA B	CBENU4ECE14041	Tata Elxsi	Date: 3-nov-2017
26	SAGI BHASWANTH VARMA	CBENU4ECE14042	Infosys	Date : Sep 11, 2017
27	R SANGAVAI	CBENU4ECE14043	Tata Elxsi	Date: 3-nov-2017
28	V SHIVASANKAR	CBENU4ECE14046	ELGI	Date: September 27, 2017
29	SHOBITH NARAYANAN	CBENU4ECE14047	ELGI	Date: September 27, 2017
30	R SIBI	CBENU4ECE14048	Infosys	Date : Sep 11, 2017
31	SIVA SURYA	CBENU4ECE14050	Mu Sigma	Date : July 17, 2017
32	SWETHA NAGARAJAN	CBENU4ECE14054	TCS	Date: Sep 24, 2017
33	THARINI SURESH	CBENU4ECE14055	TCS	Date: Sep 24, 2017
34	TUHINA MANDAL	CBENU4ECE14056	Mu Sigma	Date : July 17, 2017
35	VETRIVEL R	CBENU4ECE14059	Oracle	Date : March 14 , 2018
36	N VISHWATHARINI	CBENU4ECE14060	Robert Bosch	Date : Jul 25, 2017
37	AISHWARYA GIRIDHAR	CBENU4ECE14101	Infosys	Date : Sep 11, 2017
38	AISWARYA RANI S	CBENU4ECE14102	TCS	Date: Sep 24, 2017
39	AKSSHAYA B	CBENU4ECE14103	Robert Bosch	Date : Jul 25, 2017
40	ANERUD UPPALAPATI	CBENU4ECE14104	TCS	Date: Sep 24, 2017
41	ARAVINDH S	CBENU4ECE14106	Soliton Technologies	Date : 24 Aug 2017
42	ARUUL MOZHI VARMAN S	CBENU4ECE14107	Arista Networks	Date : 4 August, 2017
43	ARVIND RAM BASKARAN	CBENU4ECE14108	Infosys	Date : Sep 11, 2017
44	K R ASWATH	CBENU4ECE14109	Robert Bosch	Date : Jul 25, 2017
45	ASWIN RAJ M	CBENU4ECE14110	Continental AG	Date : 13/12/2017
46	BISHWARANJAN	CBENU4ECE14111	Robert Bosch	Date : Jul 25, 2017
47	CHALLA BHUPESH SAINATH REDDY	CBENU4ECE14112	TCS	Date: Sep 24, 2017
48	DEEPAK C LAL	CBENU4ECE14113	Cognizant	Date: 8th June 2018
49	DEVIKA P NAIR	CBENU4ECE14114	Mu Sigma	Date : July 17, 2017
50	GADHAMSETTY VENKATA SATYA KANAKA MADHAV	CBENU4ECE14116	Accenture	Date : OCT 6 ,2017
51	GANGA MADHURA LAALASA VALLIKA	CBENU4ECE14117	Robert Bosch	Date : Jul 25, 2017
52	GAUTHAM S	CBENU4ECE14118	Tata Elxsi	Date: 3-nov-2017
53	S JAIYANT GOPAL	CBENU4ECE14120	Continental AG	Date : 13/12/2017

54	JANANI A V S	CBENU4ECE14121	BYJU's	Date: Dec 13, 2017
55	J JANARTHANAN	CBENU4ECE14122	Tata Elxsi	Date: 3-nov-2017
56	JATTIN BADRINATH	CBENU4ECE14123	Oracle	Date : March 14 , 2018
57	KALLA TEJASWI	CBENU4ECE14124	Accenture	Date : OCT 6 ,2017
58	KARTHICK RAJA R	CBENU4ECE14126	Infosys	Date : Sep 11, 2017
59	KELWIN BHARATHI A R	CBENU4ECE14128	IBM	Date : Oct 31, 2017
60	KOTAMARAJU VENKATA SRI SAI KASHYAP	CBENU4ECE14131	Mu Sigma	Date : July 17, 2017
61	S P LAKSHMI NARAYAN	CBENU4ECE14133	Infosys	Date : Sep 11, 2017
62	LESHMI	CBENU4ECE14134	Accenture	Date : OCT 6 ,2017
63	MENAKURU SANDEEP KUMAR REDDY	CBENU4ECE14137	TCS	Date: Sep 24, 2017
64	MENDU PRANATHI REDDY	CBENU4ECE14138	Accenture	Date : OCT 6 ,2017
65	NANTHANAA M	CBENU4ECE14139	Accenture	Date : OCT 6 ,2017
66	P RAJENDRAN	CBENU4ECE14143	Mu Sigma	Date : July 17, 2017
67	RAKSANTA S	CBENU4ECE14144	Infosys	Date : Sep 11, 2017
68	RAMNARAYAN J	CBENU4ECE14145	Robert Bosch	Date : Jul 25, 2017
69	SANDEEP S	CBENU4ECE14147	Infosys	Date : Sep 11, 2017
70	V SHARATHAPPRIYAA	CBENU4ECE14148	Cognizant	Date: 8th June 2018
71	SHREYA ANIL KUMAR	CBENU4ECE14149	Bridgei2i	Date: 4 aug, 2017
72	SHRIVARSHINI K R	CBENU4ECE14150	TCS	Date: Sep 24, 2017
73	SIRAM DILEEP	CBENU4ECE14151	Accenture	Date : OCT 6 ,2017
74	SIVA MADHAVAN T	CBENU4ECE14152	Bridgei2i	Date: 4 aug, 2017
75	SUDEV P	CBENU4ECE14155	Temenos	Date: 30th Oct 2017
76	TETALI VENKATA SRAVAN KUMAR REDDY	CBENU4ECE14157	TCS	Date: Sep 24, 2017
77	TOTA NAGA AMRUTH	CBENU4ECE14158	TCS	Date: Sep 24, 2017
78	VANDAVAGULA SREE CHARAN REDDY	CBENU4ECE14159	Infosys	Date : Sep 11, 2017
79	VISHNUVARTHINI T	CBENU4ECE14160	Robert Bosch	Date : Jul 25, 2017
80	ABDUL RAZAK A.I	CBENU4ECE14201	Infosys	Date : Sep 11, 2017
81	ABINANTHU S	CBENU4ECE14202	BYJU's	Date: Dec 13, 2017
82	ADITHYA KRISHNAN G R	CBENU4ECE14204	Mu Sigma	Date : July 17, 2017
83	ANAHITA G	CBENU4ECE14206	Infosys	Date : Sep 11, 2017
84	ANUSH BHARADWAJ L	CBENU4ECE14207	Robert Bosch	Date : Jul 25, 2017

85	ANUSREE C P	CBENU4ECE14208	Infosys	Date : Sep 11, 2017
86	BASAVA SOWMYA	CBENU4ECE14209	TheMathCompany	Date: 1st Feb 2018
87	GIRIKALA PARIKSHIT	CBENU4ECE14212	Mu Sigma	Date : July 17, 2017
88	GOPI THARUN MAGANTI	CBENU4ECE14213	Mu Sigma	Date : July 17, 2017
89	GOWRI JEGATHEESH M	CBENU4ECE14214	Tata Elxsi	Date: 3-nov-2017
90	K HARI KRISHNA	CBENU4ECE14215	Wafer Space	Date : May 31, 2018
91	HARITA D	CBENU4ECE14216	TCS	Date: Sep 24, 2017
92	S S V JAGANNATH	CBENU4ECE14218	Accenture	Date : OCT 6 ,2017
93	KANCHARLA TARUN	CBENU4ECE14219	Cognizant	Date: 8th June 2018
94	KONDAMUDI CHANDRAMOULI	CBENU4ECE14221	TCS	Date: Sep 24, 2017
95	KOUSHIK MURALI SUBRAMANI	CBENU4ECE14224	Mu Sigma	Date : July 17, 2017
96	KRISHNAPRIYA K P M	CBENU4ECE14225	Robert Bosch	Date : Jul 25, 2017
97	KURAPATI BALAJI PRAKASH	CBENU4ECE14226	Atlas Healthcare Software	Date : April 25 , 2018
98	LAKSHMI PRIYA S	CBENU4ECE14227	Accenture	Date : OCT 6 ,2017
99	LAKSHMI RAMESH	CBENU4ECE14228	BYJU's	Date: Dec 13, 2017
100	LAKSHMIRAJAN K	CBENU4ECE14229	IBM	Date : Oct 31, 2017
101	LAVANYA SAI NARAYANAN	CBENU4ECE14230	Accenture	Date : OCT 6 ,2017
102	MANIMALA B VISHNU	CBENU4ECE14231	TCS	Date: Sep 24, 2017
103	MARELLA DEVAKI NANDAKISHORE	CBENU4ECE14232	Accenture	Date : OCT 6 ,2017
104	MOHANRAJ R	CBENU4ECE14234	Zoho - 4.6 LPA	Date : 15-Jan-2018
105	NATARAJAN VIGNAJEETH	CBENU4ECE14236	Oracle	Date : March 14 , 2018
106	NAVEEN RAJADURAI J	CBENU4ECE14238	EY Global Delivery Services	Date : Aug 1 ,2018
107	NIVETHASHRI S	CBENU4ECE14239	Robert Bosch	Date : Jul 25, 2017
108	RAJALAKSHMI K	CBENU4ECE14243	Robert Bosch	Date : Jul 25, 2017
109	SAGARIKHA A S	CBENU4ECE14244	Robert Bosch	Date : Jul 25, 2017
110	SANNUTHIKISHOR VENKAT KOUSHIK	CBENU4ECE14245	Renault Nissan	Date: Mar 20, 2018
111	SARAN PANDIAN P	CBENU4ECE14246	TCS	Date: Sep 24, 2017
112	S SHARADA	CBENU4ECE14247	Mu Sigma	Date : July 17, 2017
113	SIDHAARTH M	CBENU4ECE14249	TCS	Date: Sep 24, 2017
114	SREELAKSHMI K	CBENU4ECE14251	Continental AG	Date : 13/12/2017
115	SRI POOJA BALABHADRAPATRUNI	CBENU4ECE14252	Federal Bank	Date: Jul 3 , 2018

116	SRIGOVINDAN G	CBENU4ECE14253	TCS	Date: Sep 24, 2017
117	SUDHEESHNA S	CBENU4ECE14254	Mu Sigma	Date : July 17, 2017
118	SURIYANARAYANAN R	CBENU4ECE14256	Infosys	Date : Sep 11, 2017
119	VAIDYANATH R K	CBENU4ECE14257	Tata Elxsi	Date: 3-nov-2017
120	VIDHYA V	CBENU4ECE14258	HSBC Global Technologies Pvt Ltd.	Date: Mar 8, 2018
121	KATKURI SAI SUKESH REDDY	CBENU4ECE14511	Hyundai Mobis	Date : 15th Sept 2017
122	NISHANTH M	CBENU4ECE14512	Continental AG	Date : 13/12/2017

Assessment Year : 2016-17 (CAYm3)

S.No	Student Name	Enrollment No	Employee Name	Appointment No
1	Abhiram Tripuraneni	CBENU4ECE13002	Amazon-CS	7th Dec, 2016
2	Aishwarya Mala G M	CBENU4ECE13003	TCS	TCSL/CT20162082581/Chennai
3	Amrithsoorya G	CBENU4ECE13005	TCS	TCSL/CT20162082581/Chennai
4	Anusha R	CBENU4ECE13006	Tech Mahindra	1488068/ ELTP/ 2017
5	S Aparna	CBENU4ECE13007	Continental	19th Oct, 2016
6	Aravind A R	CBENU4ECE13008	Ericsson	23rd March, 2017
7	Ashwini Kayartaya	CBENU4ECE13012	Mu-Sigma	6th August, 2016
8	Balaji Yashwanth S	CBENU4ECE13016	ThermoFisher	3rd October, 2016
9	Chandrasekaran K K	CBENU4ECE13017	Caterpillar	19th January, 2017
10	Christopher B	CBENU4ECE13019	TCS	TCSL/CT20162082581/Chennai
11	Deepika Ramnath	CBENU4ECE13020	Quess Corp	28th Nov, 2016
12	Inukonda Sri Likhitha	CBENU4ECE13023	Cognizant	8th Dec, 2016
13	Kaarthikandavar	CBENU4ECE13025	Microland	Date: 7th Feb 2017
14	Kanisetty Yeswanth Chitti Sai Eswar	CBENU4ECE13026	TCS	TCSL/CT20162082581/Chennai
15	Kartheck A S	CBENU4ECE13027	Ericsson	23rd March, 2017
16	Kesavaraman S R	CBENU4ECE13028	TCS	TCSL/CT20162082581/Chennai
17	Kiran Krishnakumar	CBENU4ECE13029	Infosys	7th Feb, 2017
18	Kiruthika S	CBENU4ECE13030	Astra Zeneca	Date: 22nd Aug 2016
19	Kishore Kumar C	CBENU4ECE13031	Sonata Software	Date: 30th March 2017
20	S Lakshmi	CBENU4ECE13032	Aspire Systems	20th April, 2017
21	Makam V Gnanaswaroop	CBENU4ECE13034	Ericsson	23rd March, 2017
22	Mandala Manoj Sai Kumar Reddy	CBENU4ECE13035	Infosys	7th Feb, 2017

23	Mathu Meitha M	CBENU4ECE13036	Cognizant	8th Dec, 2016
24	Maya Krishnan	CBENU4ECE13037	Soliton Technologies	21st Sept, 2016
25	Meda Venkata Sai Nikhil	CBENU4ECE13038	TCS	TCSL/CT20162082581/Chennai
26	Mohammed Ibrahim M	CBENU4ECE13039	TCS	TCSL/CT20162082581/Chennai
27	Mugunth Krishnan R	CBENU4ECE13040	Robert Bosch	29th July, 2016
28	Nakul Kancharayan	CBENU4ECE13042	Ericsson	23rd March, 2017
29	Nanda Kumar R	CBENU4ECE13043	Ericsson	23rd March, 2017
30	Nannu Rajan	CBENU4ECE13044	Cognizant	8th Dec, 2016
31	Neerumalla Mani Srikanth	CBENU4ECE13046	Ericsson	23rd March, 2017
32	Neha M L	CBENU4ECE13047	Cognizant	8th Dec, 2016
33	Papineni Vishnu Vardhan	CBENU4ECE13048	Ericsson	23rd March, 2017
34	Pranav Vijayachandran Nair	CBENU4ECE13050	Infosys	7th Feb, 2017
35	Puttamraju Padma Mounika	CBENU4ECE13051	Cognizant	8th Dec, 2016
36	P M Reshma	CBENU4ECE13053	Amazon-CS	7th Dec, 2016
37	Satyasaikrishnamanikantagoli	CBENU4ECE13055	Ericsson	23rd March, 2017
38	Sivakalyan S	CBENU4ECE13056	AQ - TBA	Date: 19th Aug 2016
39	Sivaprasad B	CBENU4ECE13057	L&T Construction	15th March, 2017
40	Sudhir Kumar Rai	CBENU4ECE13058	Robert Bosch	29th July, 2016
41	Surya D	CBENU4ECE13060	Infosys	7th Feb, 2017
42	Tadikonda Bhavesh Sai Kiran	CBENU4ECE13061	TCI Tech	3rd May, 2017
43	Tejas Deepak	CBENU4ECE13062	Think & Learn (P) Ltd.	Date: 25th Nov 2016
44	Uppalapati Sri Harsha Varma	CBENU4ECE13063	Robert Bosch	29th July, 2016
45	Vallambottla Vinod Kumar	CBENU4ECE13064	Tech Mahindra	1488068/ ELTP/ 2017
46	Vel Murugan M	CBENU4ECE13065	Infosys	7th Feb, 2017
47	Vijayaraghavan S	CBENU4ECE13066	Ericsson	23rd March, 2017
48	Vishnu Priya P M	CBENU4ECE13067	Cognizant	8th Dec, 2016
49	Vishnudharan R	CBENU4ECE13068	Ericsson	23rd March, 2017
50	Reju Rajeev	CBENU4ECE13070	Ericsson	23rd March, 2017
51	Aishvarya J	CBENU4ECE13101	Robert Bosch	29th July, 2016
52	Aishwarya G	CBENU4ECE13102	Robert Bosch	29th July, 2016
53	Ajaykiran P	CBENU4ECE13103	Cognizant	8th Dec, 2016

54	Akash M S	CBENU4ECE13105	Ericsson	23rd March, 2017
55	Akshay Therambath Sudheer	CBENU4ECE13107	Cognizant	8th Dec, 2016
56	Anirudh S	CBENU4ECE13108	Cognizant	8th Dec, 2016
57	Arvind R	CBENU4ECE13110	Cisco	22nd June, 2016
58	Ayyagari V Sai Karthik	CBENU4ECE13111	Cognizant	8th Dec, 2016
59	Baddukonda Sai Sankar	CBENU4ECE13112	Infosys	7th Feb, 2017
60	Bilna Purupuruthan	CBENU4ECE13113	Think & Learn (P) Ltd.	Date: 25th Nov 2016
61	Divvi Surya Sai Pavan	CBENU4ECE13114	Cognizant	8th Dec, 2016
62	Garapathi Saatyaki	CBENU4ECE13115	Vdart	Date: June 3rd 2017
63	Harish R	CBENU4ECE13116	TCS	TCSL/CT20162082581/Chennai
64	Hitha Revalla	CBENU4ECE13117	L&T Construction	15th March, 2017
65	Jayanth Jaidev	CBENU4ECE13119	Amazon-CS	7th Dec, 2016
66	Kappagantu Atchuta Sashank	CBENU4ECE13120	Robert Bosch	29th July, 2016
67	Krishnia S	CBENU4ECE13125	Ericsson	23rd March, 2017
68	M Madhu Surya	CBENU4ECE13129	Ericsson	23rd March, 2017
69	Manasee	CBENU4ECE13130	Caterpillar	19th January, 2017
70	Midhun Muthu Kumar S	CBENU4ECE13132	Ericsson	23rd March, 2017
71	Monica S	CBENU4ECE13133	Tech Mahindra	1488068/ ELTP/ 2017
72	Murugappan V	CBENU4ECE13134	FIITJEE	28th March, 2017
73	M Praveen	CBENU4ECE13135	Infosys	7th Feb, 2017
74	Navaneeth Rajendran	CBENU4ECE13137	Continental	19th Oct, 2016
75	Navaneetha Krishna M	CBENU4ECE13138	Cognizant	8th Dec, 2016
76	Nilah Ravi Nair	CBENU4ECE13139	Think & Learn (P) Ltd.	Date: 25th Nov 2016
77	Nuthi Sumedha	CBENU4ECE13140	Tech Mahindra	1488068/ ELTP/ 2017
78	P S N V V Sai Manindra	CBENU4ECE13141	Robert Bosch	29th July, 2016
79	Pasunuri Sathya Priya	CBENU4ECE13142	TCS	TCSL/CT20162082581/Chennai
80	Pavithran P	CBENU4ECE13143	Robert Bosch	29th July, 2016
81	Pon Ananth V S	CBENU4ECE13144	Ericsson	23rd March, 2017
82	Pravin N	CBENU4ECE13146	Mu-Sigma	6th August, 2016
83	Preethi M	CBENU4ECE13147	Astra Zeneca	Date: 22nd Aug 2016
84	Priya S R	CBENU4ECE13148	Cognizant	8th Dec, 2016

85	Priyanka D	CBENU4ECE13149	Cognizant	8th Dec, 2016
86	Sai Swaroop K P	CBENU4ECE13150	Cognizant	8th Dec, 2016
87	Sakthi Samyukta S	CBENU4ECE13151	Astra Zeneca	Date: 22nd Aug 2016
88	Samith S	CBENU4ECE13152	Cognizant	8th Dec, 2016
89	Sebastian P Joseph	CBENU4ECE13154	Infosys	7th Feb, 2017
90	S Shruthi	CBENU4ECE13156	L&T Construction	15th March, 2017
91	SL Gurudath	CBENU4ECE13157	Ericsson	23rd March, 2017
92	Sowmya A	CBENU4ECE13159	Infosys	7th Feb, 2017
93	Srigayathri D	CBENU4ECE13160	Renault Nissan	22nd May, 2017
94	Srinath R	CBENU4ECE13161	AQ - JSE	Date: 19th Aug 2016
95	Suba Mani Rajan S	CBENU4ECE13162	Ericsson	23rd March, 2017
96	Suresh K Shishir	CBENU4ECE13164	National Instruments	25th July, 2016
97	Swetha P	CBENU4ECE13165	TCS	TCSL/CT20162082581/Chennai
98	Varun M	CBENU4ECE13166	Hinduja Global Services	Date: 6th Dec 2016
99	Vikram Seshadri	CBENU4ECE13167	TCS	TCSL/CT20162082581/Chennai
100	Yendluri Sai Sheetal	CBENU4ECE13169	Cognizant	8th Dec, 2016
101	Aakash S	CBENU4ECE13201	Quess Corp	28th Nov, 2016
102	K P Akshay	CBENU4ECE13202	National Instruments	25th July, 2016
103	Alageshan M	CBENU4ECE13203	Knowledge Lens (4.75 Lakhs)	7th Feb, 2017
104	Anisha Anand	CBENU4ECE13204	Ericsson	23rd March, 2017
105	Azad V A	CBENU4ECE13205	Infosys	7th Feb, 2017
106	Balaji S	CBENU4ECE13206	Ericsson	23rd March, 2017
107	Bhuvana Surya G	CBENU4ECE13207	Ericsson	23rd March, 2017
108	Bikki Krishna Teja	CBENU4ECE13208	TCS	TCSL/CT20162082581/Chennai
109	Bindu Kandipati	CBENU4ECE13209	TCS	TCSL/CT20162082581/Chennai
110	Deepan Chakravarthy P	CBENU4ECE13211	Ericsson	23rd March, 2017
111	Divya Rajendranath	CBENU4ECE13213	Ericsson	23rd March, 2017
112	R Giridhar	CBENU4ECE13214	Cognizant	8th Dec, 2016
113	Gokkul Nath T S	CBENU4ECE13215	Ericsson	23rd March, 2017
114	G Gokul Dheep	CBENU4ECE13216	Infosys	7th Feb, 2017
115	Gopika Sudhakaran	CBENU4ECE13217	Ericsson	23rd March, 2017

116	Goutham Kumar R	CBENU4ECE13218	TCS	TCSL/CT20162082581/Chennai
117	Gunturu Jaswanth Das	CBENU4ECE13220	Cognizant	8th Dec, 2016
118	Hari Warth K	CBENU4ECE13221	Ericsson	23rd March, 2017
119	Haritha Menon T	CBENU4ECE13222	Tech Mahindra	1488068/ ELTP/ 2017
120	Harshitha H	CBENU4ECE13223	Ericsson	23rd March, 2017
121	Hemnathe G	CBENU4ECE13224	Think & Learn (P) Ltd.	Date: 25th Nov 2016
122	Jim Kundukulam	CBENU4ECE13225	Infosys	7th Feb, 2017
123	Kallam Dinesh Babu Reddy	CBENU4ECE13226	Cognizant	8th Dec, 2016
124	S Kamala Nandhini	CBENU4ECE13227	Continental	19th Oct, 2016
125	Karan S	CBENU4ECE13228	Ericsson	23rd March, 2017
126	Karthikhaa Shree V	CBENU4ECE13229	Mu-Sigma	6th August, 2016
127	Kimudu Girija Abhilash	CBENU4ECE13231	Amazon-CS	7th Dec, 2016
128	Koneru Venkata Raja Ramchandar	CBENU4ECE13232	Infosys	7th Feb, 2017
129	Lakshna S	CBENU4ECE13233	Aspire Systems	20th April, 2017
130	M Nikhitha	CBENU4ECE13234	Cognizant	8th Dec, 2016
131	R V Madavan	CBENU4ECE13235	TCS	TCSL/CT20162082581/Chennai
132	S Mageshwaran	CBENU4ECE13236	Ericsson	23rd March, 2017
133	Maitreyi S J	CBENU4ECE13237	Amazon-CS	7th Dec, 2016
134	D Manoj Reddy	CBENU4ECE13239	Cognizant	8th Dec, 2016
135	Marimuthu N	CBENU4ECE13240	Cognizant	8th Dec, 2016
136	Meenakshi S	CBENU4ECE13241	Ericsson	23rd March, 2017
137	Nirmal Aagash C	CBENU4ECE13243	Cognizant	8th Dec, 2016
138	Patur Vishnu Prasanth Reddy	CBENU4ECE13245	Infosys	7th Feb, 2017
139	Prakash J	CBENU4ECE13246	Cognizant	8th Dec, 2016
140	Prashanth S	CBENU4ECE13248	Cognizant	8th Dec, 2016
141	Raghunandan Menon K	CBENU4ECE13249	TCS	TCSL/CT20162082581/Chennai
142	Rahul M	CBENU4ECE13250	TCS	TCSL/CT20162082581/Chennai
143	Ramuswaminaath J	CBENU4ECE13251	Robert Bosch	29th July, 2016
144	Rohan Rajeev	CBENU4ECE13253	Mu-Sigma	6th August, 2016
145	Roshan Vijay	CBENU4ECE13254	TCS	TCSL/CT20162082581/Chennai
146	Shivram S	CBENU4ECE13257	TCS	TCSL/CT20162082581/Chennai

147	Sivaprasad M	CBENU4ECE13259	Cognizant	8th Dec, 2016
148	Sneha Gayathri R	CBENU4ECE13260	Tech Mahindra	1488068/ ELTP/ 2017
149	Srimathi R	CBENU4ECE13261	Ericsson	23rd March, 2017
150	S Vallinayagam	CBENU4ECE13262	Robert Bosch	29th July, 2016
151	V Varun	CBENU4ECE13263	Cognizant	8th Dec, 2016
152	Vignesh G J	CBENU4ECE13264	Robert Bosch	29th July, 2016
153	Vijaya Kanna R	CBENU4ECE13265	Ericsson	23rd March, 2017
154	Vikranth S	CBENU4ECE13266	Brillio	7th Oct, 2016
155	A C Vishwajeet	CBENU4ECE13267	Think & Learn (P) Ltd.	Date: 25th Nov 2016
156	Vrinda R Krishnan	CBENU4ECE13268	Ericsson	23rd March, 2017
157	Akshay T Shankar	CBENU4ECE13269	BYJU's	1st Dec, 2016

4.5 Professional Activities (20) Total Marks 20.00

4.5.1 Professional societies/chapters and organizing engineering events (5) Institute Marks : 5.00

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

Anokha 2019

Student Role	Student Name	Class
Technical Head	P K Sethumathavan	IV Year
Technical Co-Head	S Harini	III Year
Workshop Head	Amara VenkataPavankumar	IV Year
Workshop Co-Head	Vijayaraghavan K	III Year
Planning & Resources Co-Head	S PranayPrasanth	III Year
Corporate Relations Head	Ikram Shah	IV Year
PR & Registration Co-Head	AswantRamana	III Year
PR & Registration Co-Head	Anirudh K	III Year
PR & Registration Co-Head	P Balasai	III Year
Finance Co-Head	PravallikaVamsi Reddy	III Year
Eventide Co-Head	Srinidhi R	III Year
Security Co-Head	Anand Krishnan	III Year
Lumiere Head	YashankFomra R	IV Year

Lumiere Co-Head	Sruthi A V K	III Year
Lumiere Co-Head	Sri Pragathi B	III Year
Transportation Co-Head	B Varsha	III Year
Fun Tech Stalls Exhibition Head	Meghanach	IV Year
Fun Tech Stalls Exhibition Co-Head	TarunVignesh	III Year
Hospitality- Head	Shruti A	IV Year
Hospitality Co-Head	G.SreeYeshvathi	III Year
Over all Department Coordinator	JuluruAnudeep	III Year

Anokha 2018

Student Role	Student Name	Class
Technical Head	KatkuriSaiSukesh Reddy	IV Year
Workshop Head	GopiTharun	IV Year
Workshop Co-head	SethuMathavan P.K	III year
Organizing Chair	Rajendran P	IV Year
Corporate Relations	Ikram Shah V	III Year
PR CO-head	S Loyola Samraj	III Year
PR CO-head	Shilpa L R	III Year
Registration Head	Devika P Nair	IV Year
Security Head	Lakshmi Ramesh	IV Year
Lumiere Head	Aswath K R	IV Year
Lumiere Co-head	AdithyaBharadwaj U	III Year
Lumiere Co-head	YashankFomra R	III Year
Web, Multimedia and Documentation	Rajendran P	IV Year
Communication Co-head	Smruthi S	III Year
Transportation Co-head	Madhumitha S	III Year

Fun Tech Stalls Exhibitions Co-head	ChitibommaMeghana	III Year
Fun Tech Stalls Exhibitions Co-head	J Pavanitha	III Year
Hospitality Co-head	A Sruthi	III Year

Workshops Hosted

Anokha 2019

Workshop Name	Resource Person / Organization	Date
Robotics and Industrial Auto	AGIIT-Axis Global Institute of Industrial Training	14-15 February,2019
MATLAB	Mathworks	14 February 2019
Workshop on MSP432 Launchpad using Energia MT	Dr.Binoy B Nair, Mr.K.P.Peeyush	15-16February,2019

Anokha 2018

Workshop Name	Resource Person / Organization	Date
Labview	National Instruments	22-23 February 2018
Deep Learning	Dr.K.P.Soman	22-23 February 2018
Software Defined Radio	Dr.R.Gandhiraj	23 February 2018
Bluetooth Controlled Robotics	S P Robotic Works	22-23 February 2018
Prototyping IOT Applications using XDK	Robert Bosch	22-23 February 2018

Anokha 2017

Student Role	Student Name	Class
Technical Head	Suresh K Shishir	IV Year
Technical Co-head	Bibaswankar B	IV Year

Workshop Co-head	KatkuriSaiSukesh Reddy	III year
Organizing Chair	VikramSeshadri	IV Year
PR Head	Bhuvana Surya G	IV Year
Registration Head	PSNVV SaiManindra	IV Year
Registration Co-head	Devika P Nair	III Year
Security Co-head	Lakshmi Ramesh	III Year
Lumiere Head	Karthika Shree	IV Year
Lumiere Co-head	Aswath K R	III Year

Workshops Hosted

Workshop Name	Resource Person / Organization	Date
Labview	National Instruments	2 March 2017
Bluetooth Controlled Robotics	S P Robotic Works	2 March 2017
Internet of Things	Mr.K.P.Peeyush	3 March 2017
Free Mentorship for Top5 Ideas	Amrita TBI	3 March 2017
Industrial Automation	AGIIT	4 March 2017

Anokha 2016

Student Role	Student Name	Class
Eventide Head	Midhila E R	IV Year
Security Head	Ajay M D	IV Year
Security Head	Aishwarya Suresh	IV Year
Lumiere Head	Bharadwaj K	IV Year
Lumiere Co-head	Meenakshi S	III Year
Lumiere Manager	Sneha C Mohanan	IV Year
Public Relations Manager	Vudavagandla R V	IV Year
Finance Manager	R Manish	III year
Eventide Team Leader	VikramSeshadri	III Year
Eventide Team Leader	Aakash S	III Year

Communication Team Leader	Hemanthe G	III Year
Transportation Team Leader	Bhuvana Surya G	III Year
Transportation Team Leader	Jaswanth Das	III Year
Food Stalls Team Leader	BhaveshSaiKiran T	III Year
Food Stalls Team Leader	Krishnia S	III Year

Workshops Hosted

Workshop Name	Date
FPGA Design with Verilog	18-19 February 2016
Embedded Design Using GOGO Board	18-19 February 2016
Haptic Robotic Arm	19-20 February 2016
Internet of Things	18-19 February 2016

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

Institute Marks : 5.00

- Amritadhwani, the annual college magazine is published every year. Certain Students serve as editors and others contribute articles. It acts as a platform for the students to showcase their creativity.

Academic Year : 2017-2018

S.No	Student Editors and Language	Contributors
1	TuhinaMandal English	NachiketVenkat
2	Smruthi S – English	Rashmika C K
3	Rajendiran – Media and Design	Rajaraman
4		SaranPandian

- Smruthi S of third year contributed an article titled " Amrita celebrates EU Day" in Campus Beats a news letter by the Department of Mass Communication.

Academic Year: 2016-2017

S.No	Student Editors and Language	Contributors
1	Harshitaa– English	Monica Suresh
2	TuhinaMandal –English	NachiketVenkat
3	Rajendiran – Media and Design	Kirithika
4		Srinath R
5		Saran Pandian
6		Sudhir Kumar Rai

- Smruthi S of second year served as an event reporter for Entrepreneurship Awareness Camp organized by Amrita Centre for Entrepreneurship.

4.4.3 Participation in inter-institute events by students of the program of study (10) Institute Marks : 10.00

Academic Year: 2018-2019

Name	Prize/Participation	Title	Event Venue	Level Institute/State/National/International
JuluruAnudeep	Second Prize	Titan Wear Hacks Hackathon 2018	Bangalore	National

Academic Year: 2017-2018

Name	Prize/ Participation	Title	Event Venue	Level Institute/State/National/International
Ikram Shah	First Prize	Smart Efficient IOT Tracking System for Perishables	Industrial IOT Hackathon GE Digital, Bangalore	National
Ikram Shah	Selected in Top 18	Tamil Nadu Student Innovators 2017	Entrepreneurship Development institute , Govt. of TN and Forge Accelerator, Coimbatore	State
Karthikeyan S	Selected in Top 18	Tamil Nadu Student Innovators 2017	Entrepreneurship Development institute , Govt. of TN and Forge Accelerator, Coimbatore	State
Ikram Shah	Winner	Makeathon 2.0	Lema Labs at IIT Madras	National
Karthikeyan S	Winner	Makeathon 2.0	Lema Labs at IIT Madras	National
SubhashChandran	Winner	Makeathon 2.0	Lema Labs at IIT Madras	National
Ikram Shah	Won Certificate of Appreciation	World Food India Hackathon 2017	Ministry of Food Processing Industries,Govt of India,New Delhi	National
Ikram Shah	Participated	Engineering the Eye 2017	L.V Prasad Eye Institute and MIT media Lab, Hyderabad	International

C P Mitra	Participated	Inter University Zonal Youth Festival	Hindustan Institute of Technology and Science	National
Gokul R	Second Prize	IM The Future	IMT Ghaziabad	National
Shanmuga Pradeep P	Third Prize	IM The Future	IMT Ghaziabad	National
Sharath Kumar	Third Prize	IM The Future	IMT Ghaziabad	National

Academic Year: 2016-2017

Name	Prize/ Participation	Title	Event Venue	Level Institute/State/National/International
Ikram Shah	III Prize	Case study Challenge E-summit	NIT Trichy	National
Ikram Shah	II Prize	Startup Idea	Native lead Foundation at Rotary CD Hall, Erode	National
Lokharan M	Won *certificate of achievement*	BES-SEC Students Design Competition	Singapore	International
Lokesh Kumar K C	Won *certificate of achievement*	BES-SEC Students Design Competition	Singapore	International
Harish Kumar V	Won *certificate of achievement*	BES-SEC Students Design Competition	Singapore	International
Natarajan	I Prize	PickoRobo ANOKHA 2017	Amrita VishwaVidyapeetham	National
SubashChandran	III Prize	Crack-it-Ralph ANOKHA 2017	Amrita VishwaVidyapeetham	National

SooryaVignesh	III Prize	Crack-it-Ralph ANOKHA 2017	Amrita VishwaVidyapeetham	National
Karthikeyan S	III Prize	Embetrix ANOKHA 2017	Amrita VishwaVidyapeetham	National
Ikram Shah	II Prize	Bosch Makeathon2016	NASSCOM 10000 StartUps, Bangalore	National
SubashChandran	II Prize	Bosch Makeathon2016	NASSCOM 10000 StartUps, Bangalore	National
Karthikeyan S	II Prize	Bosch Makeathon2016	NASSCOM 10000 StartUps, Bangalore	National
AdithyaBharadwaj	II Prize	Bosch Makeathon2016	NASSCOM 10000 StartUps, Bangalore	National
Karthikeyan S	III Prize	StartUpwars	IIT Madras	National

Publication List:

2018-2019

1. Saieshwar R, Ramanathan R, “A support vector machine with Gabor features for

   Animal Intrusion Detection in Agriculture fields” in 8th International Conference on Advances in Computing & Communications” (ICACC- 2018), vol.143, pp.493-501. https://doi.org/10.1016/j.procs.2018.10.422

2. Lakshmi Narayan S.P., Kavinkartik E., Prabhu E. (2019) IoT Based Food

   Inventory Tracking System. In: Thampi S., Marques O., Krishnan S., Li KC., Ciuonzo D., Kolekar M. (eds) Advances in Signal Processing and Intelligent Recognition Systems. SIRS 2018. Communications in Computer and Information Science, vol 968. Springer, Singapore.

   https://doi.org/10.1007/978-981-13-5758-9_4.

3. V. Mekaladevi, D. R. Kumar Reddy and N. Mohankumar, "Embedded Device

Security and Access Control of Quadcopter with a Taser through Encryption," *2018 3rd International Conference on Communication and Electronics Systems (ICCES)*, Coimbatore, India, 2018, pp. 549-553. doi: 10.1109/CESYS.2018.8723964.

4. A. A. Raj, K. A. Karthik, S. Sachin, M. Sanchana and M. Ganesan, "A Wearable Device to Detect Blood Volume Change," *2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)*, Coimbatore, India, 2019,pp.379-381.doi:10.1109/ICACCS.2019.8728520.

5. S. Azhaginiyan, M. Anish, M. K. Shivaranjan and M. Ganesan, "Denoising of BCG Signal using Multi Resolution Analysis," *2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)*, Coimbatore, India, 2019, pp.1005-1008. doi: 10.1109/ICACCS.2019.8728549.

6. A. Krishna, L. S. Anusree Raj, G. Priyadarsini, S. Raghul and S. R. Ramesh, "A Low Power Binary Square rooter using Reversible Logic," *2019 5th International Conference on Advanced Computing & Communication Systems (ICACCS)*,Coimbatore,India,2019,pp.619-623. doi:10.1109/ICACCS.2019.8728490.

7. A. K.V., G. Naga Rama Mangaiah Naidu, K. K., K. D. and Kirthigha. S., "Spectrum Sensing using Sparse Bayesian Learning," *2019 International Conference on Communication and Signal Processing (ICCSP)*, Chennai, India, 2019, pp.0582-0586. doi: 10.1109/ICCSP.2019.8698108.

8. G. Rajam, P. Sandeeptha and Sudheesh. P., "Channel Estimation for High Speed Wireless Systems using Gaussian Particle Filter and Auxiliary Particle Filter," *2019 International Conference on Communication and Signal Processing(ICCSP)*,Chennai,India,2019,pp.0744-0748

doi: 10.1109/ICCSP.2019.8698063

9. S. Nandhini, S. S. Mrinal, N. Balachandran, K. Suryanarayana and D. S. H. Ram, "Electronically assisted automatic waste segregation," *2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli,India,2019,pp.846-850.doi:10.1109/ICOEI.2019.8862666.

10. C. N. Kumar, A. Madhumitha, N. S. Preetam, P. V. Gupta and J. P. Anita, "Fault Diagnosis Using Automatic Test Pattern Generation and Test Power Reduction Technique for VLSI Circuits," *2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli, India, 2019, pp. 412-417.doi:10.1109/ICOEI.2019.8862751.

11. S. Dheepadharshani, S. Anandh, K. B. Bhavinaya and R. Lavanya, "Multivariate Time-series Classification for Automated Fault Detection in Satellite Power Systems," *2019 International Conference on Communication and Signal Processing (ICCSP)*,Chennai, India, 2019, pp. 0814-0817. doi:10.1109/ICCSP.2019.8698017.
12. S. Nest, S. Maddineni, R. Priyanga and P. Sudheesh, "Unscented Particle Filter for Channel Estimation of OFDM Communication Systems," *2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli,India,2019,pp.600-604.doi:10.1109/ICOEI.2019.8862643.

13. S. Karthikeyan, T. SooryaaVignesh, A. Sri SaiSathyaKeshav, S. Subhas Chandran and S. Kirthiga, "Parameter Estimation and Prediction using Rotational Invariant Techniques in MIMO System using USRP," *2019 International Conference on Communication and Signal Processing (ICCSP)*, Chennai,India,2019,pp.0833-0837.doi:10.1109/ICCSP.2019.8698066.

14. S. Smruthi, R. S. Krishna and M. Panda, "Low Energy Sensor Data Collection using Unmanned Aerial Vehicles," *2019 3rd International Conference on Trends in Electronics and Informatics (ICOEI)*, Tirunelveli, India, 2019, pp. 740-745.doi:10.1109/ICOEI.2019.8862558.

15. A. V. P. Kumar, S. Bharathi, C. Meghana, K. Anusha and M. Priyatharishini, "Toggle Count Based Logic Obfuscation," *2019 3rd International conference on Electronics, Communication and Aerospace Technology (ICECA)*, Coimbatore,India,2019,pp.809-814.doi:10.1109/ICECA.2019.8821935.

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5 FACULTY INFORMATION AND CONTRIBUTIONS (200)

Total Marks 181.12

:

Sr. No	Name	PAN No.	University Degree	Date of Receiving Degree	Area of Specialization	Research Paper Publications	Ph.D Guidance	Faculty receiving Ph.D during the assessment year	Current Designation	Date (Designated as Prof / Assoc. Prof.)	Initial Date of Joining	Association Type	At present working with the Institution (Yes / No)	Date of Leaving	IS HOD?
1	JAYAKUMAR M	ADPPM8997G	ME/M. Tech and PhD	01/04/1996	Communication Engineering	48	8	2	Professor	01/01/2011	05/07/2004	Regular	Yes		Yes
2	SANTHOSH KUMAR CHELLAPPAN PILLAI	ASLPS3833N	ME/M. Tech and PhD	01/07/2011	Signal Processing	37	7	2	Professor	01/07/2013	24/10/2001	Regular	Yes		No
3	NIRMALADEVI M	ACVPD8307L	ME/M. Tech and PhD	01/02/2010	Electronic Devices and Circuits	47	8	2	Professor	01/07/2014	03/06/1996	Regular	Yes		No
4	VENI SHANMUGAM	ARJPS3981J	ME/M. Tech and PhD	02/01/2012	Signal Processing	34	6	1	Associate Professor	01/03/2012	07/02/2001	Regular	Yes		No
5	YAMUNA BALASUBRAMANIAN	AAUPY1391G	ME/M. Tech and PhD	01/02/2013	Communication Engineering	21	2	1	Associate Professor	01/07/2013	12/06/2000	Regular	Yes		No

6	BALA TRIPURA SUNDARI.B.	AGNPB3768P	ME/M. Tech and PhD	01/05/2013	Electronic Devices and Circuits	21	3	0	Associate Professor	01/07/2013	01/06/1998	Regular	Yes		No
7	RAJAGOPALAN T	BUTPR4474F	M.Sc. and PhD	01/08/2002	Electronic Devices and Circuits	47	1	0	Associate Professor	15/05/2014	15/05/2014	Regular	Yes		No
8	ANITA J.P	ACBPA4651N	ME/M. Tech and PhD	02/12/2013	Electronic Devices and Circuits	22	1	0	Assistant Professor		03/06/1996	Regular	Yes		No
9	SUDHEESH PADMANABHAN	AJTPP8732A	M.E/M.Tech	01/10/2002	Communication Engineering	23	0	0	Assistant Professor		22/05/1997	Regular	Yes		No
10	R.KARTHIKA	AGBPR6882J	M.E/M.Tech	01/06/2011	Signal Processing	9	0	0	Assistant Professor		16/07/2001	Regular	Yes		No
11	SABARISH NARAYANAN BALAGANGADHARAN	AHNPB9474B	M.E/M.Tech	01/06/2007	Communication Engineering	15	0	0	Assistant Professor		01/07/2002	Regular	Yes		No
12	KIRTHIGA S.	AAZPK1675L	ME/M. Tech and PhD	01/01/2015	Communication Engineering	20	3	0	Assistant Professor		03/04/2003	Regular	Yes		No
13	KAYALVIZHI NATARAJAN	BJWPK8627B	M.E/M.Tech	02/06/2008	Electronic Devices and Circuits	8	0	0	Assistant Professor		07/07/2003	Regular	Yes		No
14	MEKALADEVI VELUSAMY	AKDPM2790A	M.E/M.Tech	01/07/2013	Communication Engineering	4	0	0	Assistant Professor		19/01/2004	Regular	Yes		No
15	MOHANKUMAR NATARAJAN	ALXPM2508F	M.E/M.Tech	02/06/2008	Electronic Devices and Circuits	20	0	0	Assistant Professor		01/07/2004	Regular	Yes		No
16	DEVI VIJAYAN	AFCPV8335G	M.E/M.Tech	01/06/2006	Signal Processing	4	0	0	Assistant Professor		03/07/2006	Regular	Yes		No
17	RAMANATHAN RAMACHANDRAN	AHZPR7835E	ME/M. Tech and PhD	01/08/2015	Communication Engineering	47	3	0	Assistant Professor		24/07/2006	Regular	Yes		No
18	LAVANYA RAJAN	ACXPL9866E	ME/M. Tech and PhD	01/04/2015	Signal Processing	17	4	0	Assistant Professor		07/07/2006	Regular	Yes		No
19	PARGUNA RAJAN	ATLPP5942N	M.E/M.Tech	01/04/2006	Communication Engineering	6	0	0	Assistant Professor		18/08/2006	Regular	Yes		No
20	VENKATA SUNIL NAG PILLA	ALHPP3481E	M.E/M.Tech	01/12/2001	Electronic Devices and Circuits	4	0	0	Assistant Professor		04/01/2006	Regular	Yes		No
21	BINOY B. NAIR	AOUPB4339K	ME/M. Tech and PhD	01/08/2015	Signal Processing	40	2	0	Assistant Professor		02/06/2007	Regular	Yes		No

22	GANESAN MARIMUTHU	ALZPG3060A	M.E/M.Tech	02/07/2007	Signal Processing	16	0	0	Assistant Professor		05/06/2007	Regular	Yes		No
23	SUGUNA GNANA PRAKASAM	BWWPS0114A	M.E/M.Tech	01/10/2013	Electronic Devices and Circuits	2	0	0	Assistant Professor		14/06/2007	Regular	Yes		No
24	ADARSH SASIDHARAN	AMFPA2095L	M.E/M.Tech	01/05/2007	Electronic Devices and Circuits	10	0	0	Assistant Professor		04/07/2007	Regular	Yes		No
25	RAMESH S R	AMEPR2508N	M.E/M.Tech	01/06/2007	Electronic Devices and Circuits	15	0	0	Assistant Professor		09/07/2007	Regular	Yes		No
26	KARTHIGHA BALAMURUGAN	AXEPK3156A	M.E/M.Tech	01/05/2007	Electronic Devices and Circuits	16	0	0	Assistant Professor		08/06/2007	Regular	Yes		No
27	VIDHYA LAKSHMANAN	AJUPV5873B	M.E/M.Tech	01/07/2013	Electronic Devices and Circuits	0	0	0	Assistant Professor		02/07/2008	Regular	Yes		No
28	PRABHA G GOPINATHAN NAIR	BAVPP0707R	M.E/M.Tech	01/12/2007	Signal Processing	3	0	0	Assistant Professor		04/07/2008	Regular	Yes		No
29	ROLANT GINI JOHN BARNA BOSS	AOLPR0202A	M.E/M.Tech	01/06/2010	Signal Processing	10	0	0	Assistant Professor		01/07/2008	Regular	Yes		No
30	PRIYATHARISHINI MURUGESAN	BCQPP4057H	M.E/M.Tech	01/10/2013	Electronic Devices and Circuits	10	0	0	Assistant Professor		14/07/2008	Regular	Yes		No
31	RAJESH C.B	ARZPR8254M	M.E/M.Tech	01/12/2005	Signal Processing	2	0	0	Assistant Professor		01/12/2008	Regular	Yes		No
32	HARISH RAM D.S	ASOPS4582M	ME/M. Tech and PhD	01/01/2014	Electronic Devices and Circuits	12	2	0	Assistant Professor		21/05/2008	Regular	Yes		No
33	GANDHIRAJ RAJENDRAN	ALPPG9496A	ME/M. Tech and PhD	02/10/2017	Communication Engineering	43	0	0	Assistant Professor		23/06/2008	Regular	Yes		No
34	ANANTHA SHANMUGHA SUNDARAM GOPINATHAN	BDXPS0364J	M.Sc. and PhD	01/09/2004	Communication Engineering	45	1	1	Assistant Professor		18/11/2009	Regular	Yes		No
35	PRABHU E	AXOPP5859P	ME/M. Tech and PhD	10/04/2019	Electronic Devices and Circuits	27	0	0	Assistant Professor		01/07/2010	Regular	Yes		No

36	PEEYUSH K P	BJTPP6786P	M.E/M.Tech	28/08/2010	Electronic Devices and Circuits	7	0	0	Assistant Professor		21/07/2010	Regular	Yes		No
37	ARAVINTH J	ALHPA6908R	ME/M. Tech and PhD	26/12/2017	Signal Processing	17	1	0	Assistant Professor		01/07/2010	Regular	Yes		No
38	MADHU MOHAN	AQYPM1769N	MS and PhD	01/02/2010	Electronic Devices and Circuits	24	2	0	Assistant Professor		10/11/2010	Regular	Yes		No
39	PRIYA HARIKUMAR	ADFPH5875C	MS	01/06/2007	Electronic Devices and Circuits	2	0	0	Assistant Professor		05/07/2012	Regular	Yes		No
40	NAVYA MOHAN	CEMPM3138R	M.E/M.Tech	01/07/2013	Electronic Devices and Circuits	2	0	0	Assistant Professor		28/06/2013	Regular	Yes		No
41	ANUSHA K S	ANEPA8724C	M.E/M.Tech	16/12/2013	Electronic Devices and Circuits	3	0	0	Assistant Professor		15/07/2013	Regular	Yes		No
42	NATARAJAMANI S	AHGPN2376R	ME/M. Tech and PhD	01/11/2014	Communication Engineering	20	4	0	Assistant Professor		08/07/2015	Regular	Yes		No
43	HARIKUMAR M.E	AEOPH9591P	M.E/M.Tech	01/05/2008	Electronic Devices and Circuits	4	0	0	Assistant Professor		27/07/2015	Regular	Yes		No
44	KARTHI B	ARIPB7709C	M.Sc. and PhD	01/07/2016	Electronic Devices and Circuits	17	1	0	Assistant Professor		01/07/2016	Regular	Yes		No
45	MANOJ KUMAR PANDA	AJFPP3523P	ME/M. Tech and PhD	25/09/2010	Communication Engineering	42	0	0	Assistant Professor		12/12/2016	Regular	Yes		No
46	SURESH KUMAR P	DRSPK3058N	M.E/M.Tech	01/06/2012	Electronic Devices and Circuits	4	0	0	Assistant Professor		11/07/2018	Regular	Yes		No
47	GEETHU SATHEES BABU	DSYPS2626R	M.E/M.Tech	01/08/2014	Communication Engineering	7	0	0	Assistant Professor		01/07/2019	Regular	Yes		No
48	VINEETH PALLIYEMBIL	AYIPP6658B	M.E/M.Tech	01/06/2015	Communication Engineering	9	0	0	Assistant Professor		01/07/2019	Regular	Yes		No
49	SANJAY RAJENDRAN	DOSPS5645C	M.E/M.Tech	01/06/2010	Electronic Devices and Circuits	0	0	0	Assistant Professor		08/07/2019	Regular	Yes		No
50	KALYAN BHATTACHARYYA	ADRPB3360N	M.Sc. and PhD	01/06/2015	Electronic Devices and Circuits	15	0	0	Assistant Professor		01/10/2015	Regular	No	16/11/2017	No

51	JOLLY RAJENDRAN	ALDPR2217A	M.E/M.Tech	01/10/2013		6	0	0	Assistant Professor		18/12/2006	Regular	No	07/06/2017	No

5.1 Student-Faculty Ratio (SFR) (20)

Total Marks 18.00

Institute Marks : 18

UG

No. of UG Programs in the Department 2

B.Tech - Computer And Communication Engineering						
Year of Study	**CAY**		**CAYm1**		**CAYm2**	
	(2019-20)		**(2018-19)**		**(2017-18)**	
	Sanction Intake	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**
2nd Year	0	0	0	0	0	0
3rd Year	0	0	0	0	0	0
4th Year	0	0	0	0	0	0
Sub-Total	**0**	**0**	**0**	**0**	**0**	**0**
Total	**0**		**0**		**0**	

B.Tech - Electronics and Communication Engineering						
Year of Study	**CAY**		**CAYm1**		**CAYm2**	
	(2019-20)		**(2018-19)**		**(2017-18)**	
	Sanction Intake	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**	**Sanction Intake**	**Actual admitted through lateral entry students**
2nd Year	180	0	240	0	180	0
3rd Year	240	0	180	0	180	0
4th Year	180	0	180	0	180	0
Sub-Total	**600**	**0**	**600**	**0**	**540**	**0**
Total	**600**		**600**		**540**	

Grand Total	600	600	540

PG

No. of PG Programs in the Department 4

M.Tech - Biomedical Engineering			
Year of Study	**CAY(2019-20)**	**CAYm1(2018-19)**	**CAYm2 (2017-18)**
	Sanction Intake	**Sanction Intake**	**Sanction Intake**
1st Year	30	30	18
2nd Year	30	18	18
Total	**60**	**48**	**36**

M.Tech - Communication Engineering and Signal Processing			
Year of Study	**CAY(2019-20)**	**CAYm1(2018-19)**	**CAYm2 (2017-18)**
	Sanction Intake	**Sanction Intake**	**Sanction Intake**
1st Year	0	30	24
2nd Year	30	24	24
Total	**30**	**54**	**48**

M.Tech – Communication Systems			
Year of Study	**CAY(2019-20)**	**CAYm1(2018-19)**	**CAYm2 (2017-18)**
	Sanction Intake	**Sanction Intake**	**Sanction Intake**
1st Year	30	0	0
2nd Year	0	0	0
Total	**30**	**0**	**0**

M.Tech - VLSI Design			
Year of Study	**CAY(2019-20)**	**CAYm1(2018-19)**	**CAYm2 (2017-18)**
	Sanction Intake	**Sanction Intake**	**Sanction Intake**
1st Year	30	30	25
2nd Year	30	25	25
Total	**60**	**55**	**50**

Grand Total	180	157	134

SFR

No. of UG Programs in the Department 2

No. of PG Programs in the Department 4

Description	CAY(2019-20)	CAYm1 (2018-19)	CAYm2 (2017-18)
Total No. of Students in the Department(S)	780 **Sum total of all (UG+PG) students**	757 **Sum total of all (UG+PG) students**	674 **Sum total of all (UG+PG) students**
No. of Faculty in the Department(F)	46 **F1**	43 **F2**	42 **F3**
Student Faculty Ratio(SFR)	16.96 **SFR1=S1/F1**	16.05 **SFR2=S2/F2**	17.60 **SFR3=S3/F3**
Average SFR	16.87 **SFR=(SFR1+SFR2+SFR3)/3**		
F=Total Number of Faculty Members in the Department (excluding first year faculty)			

Note: 75% should be Regular/full time faculty and the remaining shall be Contractual Faculty/Adjust Faculty/Resource persons from industry as per AICTE norms and standards. The contractual faculty will be considered for assessment only if a faculty is drawing a salary as prescribed by the concerened State Government for the contractual faculty in the respective cadre.

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

	Total number of regular faculty in the department	Total number of contractual faculty in the department
CAY(2019-20)	46	0
CAYm1(2018-19)	43	0
CAYm2(2017-18)	42	0

Average SFR for three assessment years : 16.87

Assessment SFR : 18

5.2 Faculty Cadre Proportion (20) Total Marks 19.00

Institute Marks : 19.00

Year	Professors		Associate Professors		Assistant Professors	
	Required F1	Available	Required F2	Available	Required F3	Available
CAY(2019-20)	4.00	3.00	8.00	3.00	26.00	40.00
CAYm1(2018-19)	4.00	3.00	8.00	3.00	25.00	37.00
CAYm2(2017-18)	3.00	3.00	7.00	3.00	22.00	36.00
Average Numbers	3.67	3.00	7.67	3.00	24.33	37.67

Cadre Ratio Marks [(AF1 / RF1) + [(AF2 / RF2) * 0.6] + [(AF3 / RF3) * 0.4]] * 10 : 19.00

5.3 Faculty Qualification (20)

Total Marks 15.27

Institute Marks : 15.27

	X	Y	F	FQ = 2 x [(10X + 4Y) / F)]
2019-20(CAY)	18	28	38.00	15.37
2018-19(CAYm1)	17	26	37.00	14.81
2017-18(CAYm2)	15	27	33.00	15.64

Average Assessment : 15.27

5.4 Faculty Retention (10)

Total Marks 10.00

Institute Marks : 10.00

Description	2018-19 (CAYm1)	2019-20 (CAY)
No of Faculty Retained	42	42
Total No of Faculty	42	42
% of Faculty Retained	100	100

Average : 100.00

Assessment Marks : 10.00

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

Total Marks 10.00

Institute Marks : 10.00

Faculty Competencies in correlation to Program Specific Criteria

A correlation between the outlined program specific criteria, specializations offered and competency available in the department is presented in Table B.5.5.1. The list of elective pertaining to various specialization is provided in table B.5.5.2

S.No	Parameters	Electronic Devices and Circuits	Communication Engineering	Signal Processing
1.	Faculty with Ph.D	8	9	5
2.	No.of Research Scholars	18	20	20
3.	Publications (2017-present)	96	96	114
4.	Funded Projects	4	5	5
5.	Industry Oriented Research Projects	2 with IBM	1 with NI	1 with AHRC

Table B.5.5.1 Competency Metrics of the Department

Electronic Devices and Circuits	Communication Engineering	Signal Processing
Biomedical Instrumentation	Antenna Systems and Design	Active Filter Desgin
Analog and Mixed Circuit Design	Cellular and Mobile Communications	Adaptive Signal Processing
Analog IC design	Digital Telephony	Analog Signal Processing
Applications of Linear Integrated Circuits	Introduction to Radar Systems	Aviation Electronics
Integrated Circuits for Biological systems	Microstrip Devices and Circuits	Biomedical Image Processing
Data Security	Microwave Solid State Devices	Biometric Systems
Digital IC Design	Millimetre wave personal communication systems	Digital Signal Processors and Applications
Electronics System Level Design and Verification	MIMO and Multi carrier systems	Hyperspectral Imaging Analysis
Embedded Systems	Multimedia Communication standards	Image Analysis
Hardware Security and Trust	Optical Communication	Image Processing
Principles of VLSI Testing	Principles of RFID Design	Pattern Recognition Techniques and Algorithms

RISC Processor Design using HDL	Radio Frequency circuit Design	Sparse Signal and Image Processing
VLSI Fabrication Technology	Satellite Communications	Spoken Language Processing
VLSI Digital Signal Processing Systems	Software Defined radio	Wavelet based Signal Processing and Applications
VLSI system Design	Spread Spectrum Communication	Introduction to Soft Computing
	Wireless Communications	

Table B.5.5.2 Elective Courses offered by the Department

Technical Events Organized by the Department in the last Five Years:

INDICON 2018 – The Annual Conference of IEEE India Council was held at Amrita VishwaVidyapeetham from December 16 – 18, 2018. The Department of ECE was the nodal point for conduct of this program.

S.No	Name of the Technical Event	Duration
1.	National Symposium on Green Electronics	12/12/2014 - 13/12/2014
2.	One day Research Seminar on Emerging Perspectives in Nanoelectronics R&D	19/09/2014 - 20/09/2014
3.	National Workshop on Embedded Design Flow Using Xilinx ZynQSoc	27/02/2015 - 28/02/2015
4.	Two-day workshop on Xilinx Vivado System Generator and Analog Discovery Kit	27/02/2015 - 28/02/2015
5.	National Workshop on Biomedical signal acquisition and signal conditioning	17/12/2015 - 19/12/2015
6.	National Workshop on Software Defined Radio and its Strategic Applications	21/01/2016 - 22/01/2016
7.	National Seminar on Techniques and Applications of Hyperspectral Image Analysis	19/04/2016 - 20/04/2016
8.	National Workshop on The Role of Universities in Empowering Indian Villages	21/09/2016 - 23/09/2016
9.	National Workshop on Image Processing for Biomedical Applications - IPBA 2016	16/12/2016 - 17/12/2016

10.	International Workshop on Creative Thinking and User Centred Design	15/05/2018 - 16/05/2018
11.	International Workshop on Rural Healthcare in India	18/05/2018 - 19/05/2018
12.	IETE Sponsored One Day Workshop on Cyber Physical Systems and IoT using ESP8266	29/03/2019

Table B.5.5.3 Technical Events Conducted by the Department

5.6 Innovations by the Faculty in Teaching and Learning (10)

Total Marks 10.00

Institute Marks : 10.00

1. **Open Laboratory - 15ECE387 Open Lab**

Open lab is one credit course for sixth semester UG students of Electronics and Communication engineering. Open lab was conceived as a process of “opening” all the “laboratories” in the department for ECE students to implement their ideas and convert them into prototypes. The students were encouraged to explore laboratories of other departments. In line with above principle, the course objective was formulated as follows:

Course Objective :“To develop competency in design, development, analysis and hardware prototyping of solutions to real time problems and to effectively transform ideas to reality”,

and consequently the course outcomes (COs) were formulated as below, with significant mapping to higher POs.

Course Outcomes

1. Ability to analyze real time challenges and investigate scope for employing technology to develop functional solutions.
2. Ability to analyze the state of the art literature in the selected technology domain and arrive at functional and sustainable solutions.
3. Design the required system using appropriate EDA tools and implement the hardware.
4. Ability to analyze the implementation impact and suggest improvements or modifications.
5. Present the concept with adequate validation on technical aspects and cost analysis using a report and seminar.

CO-PO Mapping

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO 1	PSO 2
CO1	3					2			2			2	3	
CO2		3					2		2			2	3	
CO3			3		2			2					3	2
CO4				3	2								3	2
CO5									2	3	2			

Methodology:

Timeline	Activity
Semester Start	• Students form groups of four and conceive an idea • They present it with documentation (Annexure A) to Course instructors. • The course instructors have an intense discussion with students to ascertain the suitability if the proposal with the course objectives and outcomes. • Proposal finalization
Mid semester	• Students present a mid semester progress documentation – Annexure B • The course instructors evaluate the progress based on claims provided by the students during proposal submission/finalization
End Semester	• Final demonstration of the prototype/proof of concept along with documentation – Annexure C

Conclusion:

The students were provided with an opportunity to experiment with an “open” idea”. Many students responded with appositive feedback indicating that it was a useful starting step for taking up final year project work. A set of feedback questions were answered by students and their responses are encouraging (2016-20 Batch)

		ECE A	ECE B	ECE C
1.	Open lab was helpful in understanding real time problem scenario	85%	88%	86%
2.	Open lab encouraged me to read through technical literature available on a particular topic	85.5%	87.5%	86%
3.	Open lab provided me exposure to electronic circuits simulation tools	85%	88.25%	84%
4.	Open lab provided good scope for developing my circuit debugging skills.	85%	88.25%	85.25%
5.	I am now in a position to write a good technical report.	85%	86.25%	84.75%
Average Score (in %) class-wise:		**85.16%**	**87.66%**	**85.16%**

2. **Innovative practices followed in 15ECE281 Digital Circuits and Systems Lab**

IDEA:*In addition to the regular experiments a real-time digital sub-system to be developed by the student team.*

The Digital Circuits and Systems Laboratory is a core lab course for third semester B. Tech. (ECE) as well as B. Tech (EIE) students. There is a theory course (15ECE281 Digital Circuits and Systems) running concurrently with the lab course. The course is also prescribed for third semester B. Tech (CSE) students. The main aim of the revised scheme is to utilize the lab component to impart analytical and problem solving skills to the students in the domain of digital systems. The scheme is assignment-driven rather than experiment-driven so that the disconnect between theory and practice is addressed. The assignments are designed such that all the different aspects of

digital design starting from combinational design, use of MSI subsystems, sequential elements and displays are covered. It is expected that the lab will effectively complement the theory course. It also provides the flexibility for the students to use their off-lab hours towards completion of the lab assignments.

Many scientific, industrial and commercial advances have been made possible by the advent of computers. Digital Logic Circuits form the basis of any digital (computer) system. These circuits can be easily analyzed/designed using Boolean Algebra, which is the mathematics associated with binary systems.

On successful implementation and completion of the mini project students will have the skills and confidence to conceive and implement a complex digital system.

More broadly, they will be ready to handle substantial and challenging design problems. In particular, students will be able to:

- Explain the elements of digital system abstractions such as digital representations of information, digital logic, Boolean algebra, state elements and finite state machine (FSMs).
- Design simple digital systems based on these digital abstractions
- Use the "tools of the trade": basic instruments, devices and design tools.
- Work in a design team that can propose, design, successfully implement and report on a digital systems project.
- Communicate the purpose and results of a design project in written and oral presentations.

At the end of the course the students shall

- Acquire better insight into basic concepts of digital electronics
- Be able to translate a real-life problem into the domain of digital logic
- Develop the ability to identify appropriate standard building blocks for a given design
- Learn to use Logic simulator tool to simulate and validate designs
- Learn how to prototype and debug designs at the breadboard level
- Develop an inclination for taking up more projects for value addition to their course

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

Total Marks 3.85

Institute Marks : 3.85

Name of the faculty	Max 5 Per Faculty		
	2018-19(CAYm1)	2017-18(CAYm2)	2016-17(CAYm3)
Dr.M.Jayakumar	3.00	3.00	0.00
Dr.C.Santhosh Kumar	5.00	0.00	0.00
Dr.S.Veni	0.00	0.00	3.00
Dr.Yamuna B	3.00	3.00	0.00
Mr.SabarishNarayanan	3.00	5.00	0.00
Dr.S.Kirthiga	0.00	5.00	3.00
Ms.V.Mekala Devi	0.00	3.00	0.00

Ms.DeviVijayan	0.00	3.00	0.00
Mr.K.Pargunarajan	3.00	0.00	0.00
Mr.Ganesan M	5.00	0.00	0.00
Ms.G.Suguna	0.00	3.00	0.00
Mr.S.Adarsh	3.00	0.00	0.00
Ms.M.Priyatharishini	3.00	3.00	0.00
Dr.Gandhiraj R	5.00	5.00	0.00
Mr.Prabhu E	3.00	0.00	0.00
Dr.Aravinth J	5.00	3.00	0.00
Dr.S.Natarajamani	0.00	3.00	0.00
Dr.B.Karthi	3.00	3.00	0.00
Dr.Kalyan B	0.00	0.00	5.00
Sum	44.00	42.00	11.00
RF = Number of Faculty required to comply with 15:1 Student Faculty Ratioas per 5.1	52.00	50.47	44.93
Assessment [3*(Sum / 0.5RF)]	5.08	4.99	1.47

Average assessment over 3 years: 3.85

5.8 Research and Development (75) Total Marks 75.00

5.8.1 Academic Research (20) Institute Marks : 20.00

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

- Number of quality publications in refereed/SCI Journals, citations, Books/Book Chapters etc. (15)
- Ph.D. guided /Ph.D. awarded during the assessment period while working in the institute (5)

Year	Number of Scopus Indexed Papers	Number of SCI Indexed Journal Papers	Number of Books/Book Chapters	Number of Citations in Scopus* (A+B)**	Number of Faculty Awarded Ph.D.	Number of Ph.D. Guided	Number of Ph.D. Awarded
CAY	43	12	-	266	1	49	1
CAYm1	114	15	-	266	1	41	1
CAYm2	104	18	1	135	1	36	3

Table 5.8.1. Academic Research Details

*Citations are calendar year wise: CAY = 2019; CAYm1 = 2018; CAYm2 = 2017

5.8.2 Sponsored Research (20) Institute Marks : 20.00

2018-19 (CAYm1)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Design and Development of	2019-2021	DRDO	2221000.00
Automated Structural Evolu	2018-2020	ISRO	1270000.00
A Low-Cost Hand and Arm	2018 - 2020	DST	2094030.00
			Total Amount(X): 5585030.00

2017-18 (CAYm2)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Reliability based Soft Decis	2017-2020	ISRO	3020000.00
Capacity, bit error rate and p	2017-2019	ISRO	1227000.00
			Total Amount(Y): 4247000.00

2016-17 (CAYm3)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Capacity, bit error rate and p	2015-2017	DRDO	2377400.00
			Total Amount(Z): 2377400.00

Cumulative Amount(X + Y + Z) = 12209430.00

5.8.3 Development activities (15) Institute Marks : 15.00

- *Research Laboratories*

Communication System Design (CSD) Lab	
Research Area(s)	• Design and analysis of RF subsystems • Baseband transceiver design for wireless systems • Electromagnetic (EM) characterization of materials

Activities	• SAC-ISRO RESPOND ongoing project titled “Capacity, bit error rate and performance analysis of MIMO based communication system on minimized multipath environment,” sanctioned July 2017. • DRDO and IETE sponsored National Workshop on “Software Defined Radio and its Strategic Applications,” January 2016.
Equipment / Facilities	• Ettus Universal Software Radio Peripheral (USRP- N210) with modular architecture DC to 6 GHz that enables design and implementation of flexible software radio systems with GNU radio. • Ansoft High Frequency Structural Simulator (HFSS) that facilitates the design of antennas, RF/microwave components.
Student projects utilizing the lab facilities leading to publications	• Capacity Analysis of Correlated MIMO in Geosat Downlink Land Mobile System • Cooperative MIMO with Relay Selection for 4G LTE Advanced System • Two – Staged Precoder for Massive MIMO Millimeter Wave systems • Emulation of Satellite Communication for MIMO Channel Equalization by Software Defined Radio • Estimation of Angle Dispersive Parameters for a MIMO System • Two Stage Hybrid Sub-Optimal Decoding Technique for LDPC • Multiuser Detection in Sporadic Massive 3GPP M2M Communication Through Compressed Sensing • Particle Filter Based Non-Linear Non-Gaussian Channel Estimation for MIMO OFDM Systems • Design and Development of Low-Profile Substrate Integrated Dielectric Resonator Antenna for Space Application
Machine Intelligence Research Lab (MIRL)	
Research Area(s)	• Spoken language processing • Machine fault diagnosis • Signal processing for biomedical applications
Activities	• Ongoing and completed projects funded by Defense Research Development Organization (DRDO), Tata Consultancy Services (TCS), National Aerospace Laboratories (NAL) and Department of Science and Technology (DST). • International Research collaboration with Cardiff Metropolitan University (United Kingdom) and University of Agder (Norway). • National Workshop on the Role of University in Empowering Indian Villages, September 2016. • International Workshop on Rural Healthcare in India, May 2018. • International Workshop on Creative Thinking and User Centered Design, May 2018.

Awards	• TCS scholarship was awarded to K.K. George • The speaker recognition technology developed at the Lab was **internationally ranked 6th** in the 'Speakers in the Wild (SITW)' Speaker Recognition Challenge organized by SRI International, Silicon Valley,USA. Ours was the only benchmarked speaker recognition technology from India, other than IIT Guwahati which ranked 8th.
Equipment / Facilities	• Gearbox Fault Diagnosis Experimental Facility • Synchronus Generator Fault Diagnosis Experimental Facility
Hardware Security Lab (HSL)	
Research Area(s)	• Hardware Security and Trust • Secured testing of VLSI Circuits • VLSI Testing and Security • Design for Security • Hardware Design for Trust • Security in Multi-core Architectures • Computational Algorithms for Enhancing Security
Equipment/ Facilities	• Keysight MSOX3014A Mixed Signal Oscilloscope (MSO) • National Instruments Labview - Signal Express • Xilinx Virtex-6 FPGA ML605 Evaluation kit • Anvyl Spartan 6 FPGA board • Digilent Analog Discovery Kit • FMC-CE I/O CARD • Keysight Handheld Digital Multimeter with Bluetooth adapter • Portable Logic Analyzer and Digital Pattern Generator
Awards	DRDO Research Grant (2015 – 2017)
Computational Optimization and Innovations Lab (COIL)	

Research Area(s)	• Physical Layer Security • Wireless Networks • Signal Processing and Optimization for Wireless Systems • Wireless Sensor Networks • MIMO Radar
Activities	• Sponsored Project from DRDO (2019) • Infrastructure research Grant from Amrita (2019) • Collaboration with SDSC SHAR (2019) • DRDO and IETE sponsored workshop and mini-project course on “Physical Layer Security – Theory to Practice”
Equipment/ Facilities	• USRP N210 based PHY layer testing of wireless networks • USRP X300 based MIMO testing platform • NVIDIA Jetson TX2 development platform for AI & Autonomous vehicles • High end workstation for computationally intense signal processing
Awards/ Highlights	NVIDIA Research Grant (2018)

- *Instructional Materials*

CSD Lab	• Lab manual for experiments on the design of
	  ◦ Communication systems using GNU radio
	  ◦ RF subsystems using HFSS

- *Working Models/Charts/Monograms, etc.*

CSD Lab	• Register Transfer Level – Software Defined Radio (RTL-SDR)
	  ◦ Used for receiving signals from free ISM band
	  ◦ The goal is to have the Analog-to-Digital Convertor(ADC) / Digital-to-Analog Convertor (DAC) as near as possible to the antenna so that all signal processing can be done via software
	  ◦ Serves as a single platform that supports multiple signals of different frequencies, tuning any frequency within the range supported by the hardware

5.8.4 Consultancy (from Industry) (20)

Institute Marks : 20.00

2018-19 (CAYm1)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Detection and I	2019-2021	IBM	1000000.00
			Total Amount(X): 1000000.00

2017-18 (CAYm2)

Project Title	Duration	Funding Agency	Amount(in Rupees)
Improving heal	2017-2018	AHRC	2150000.00
			Total Amount(Y): 2150000.00

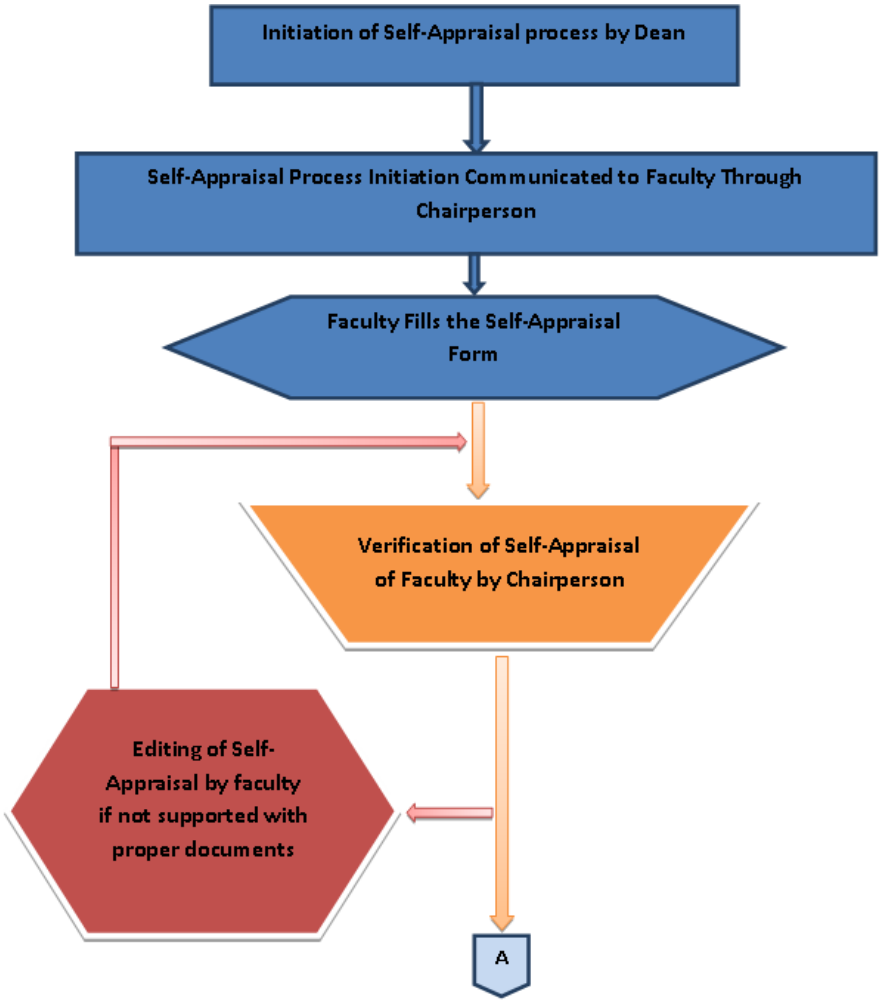
2016-17 (CAYm3)

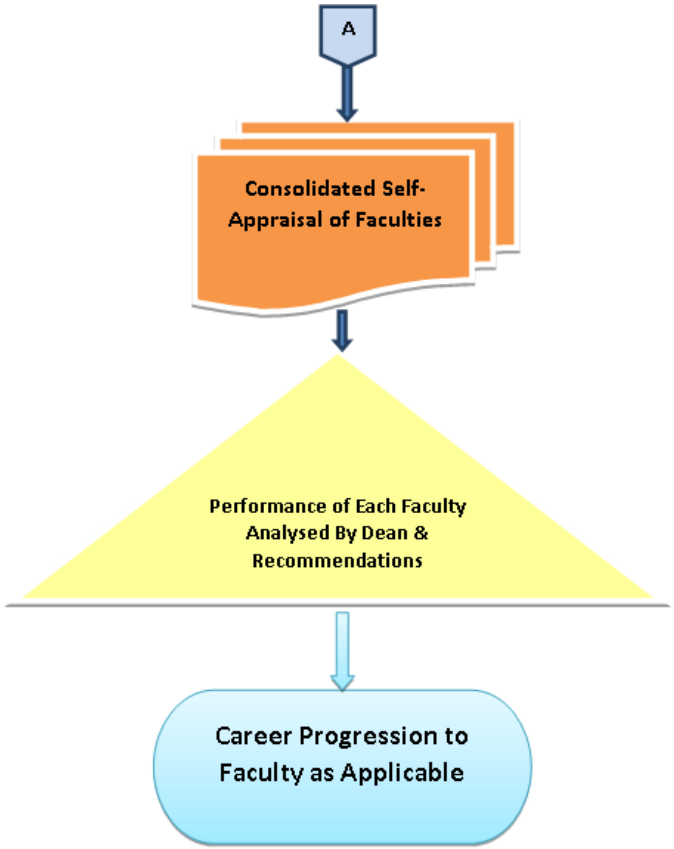
Project Title	Duration	Funding Agency	Amount(in Rupees)
Translational signal analysis	2016-2020	Pati Labs	960000.00
Design and Evaluation of D	2016-2019	National Instrui	7900000.00
			Total Amount(Z): 8860000.00

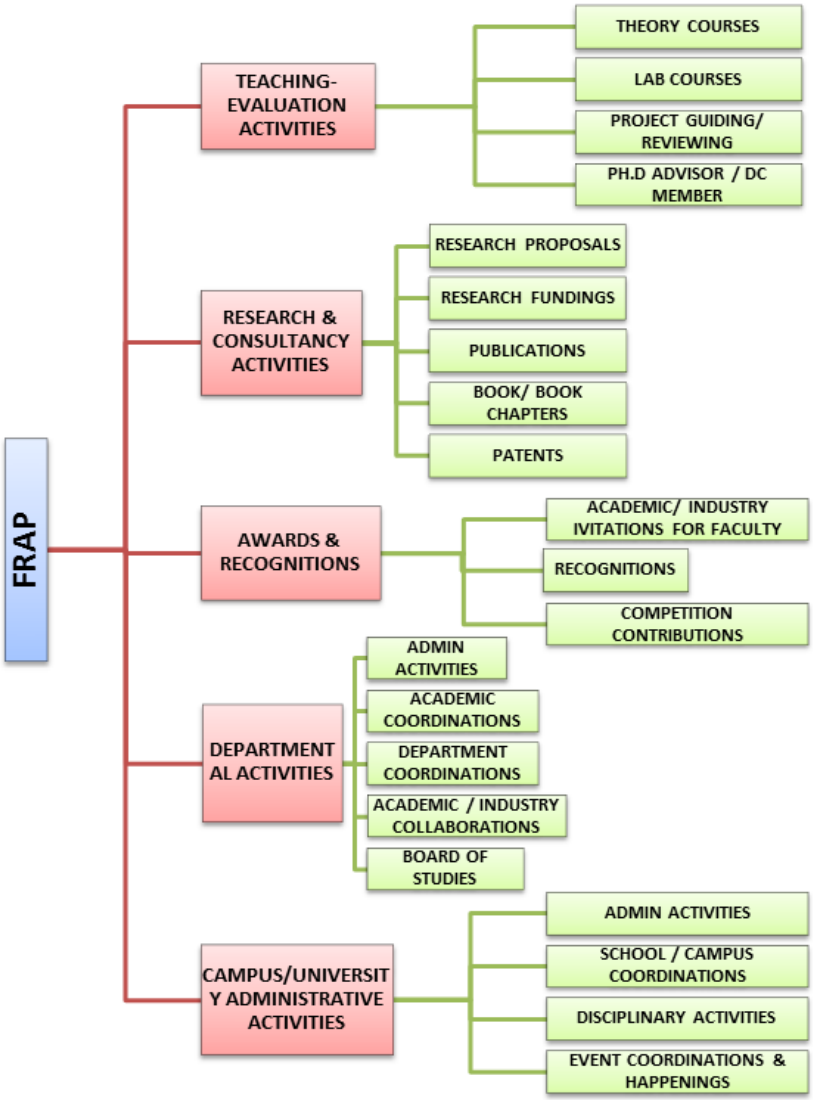
Cumulative Amount(X + Y + Z) = 12010000.00

5.9 Faculty Performance Appraisal and Development System (FPADS) (10) Total Marks 10.00

Institute Marks : 10.00


Initiation of Self-Appraisal process by Dean
Self-Appraisal Process Initiation Communicated to Faculty Through Chairperson
Faculty Fills the Self-Appraisal Form
Verification of Self-Appraisal of Faculty by Chairperson
Editing of Self-Appraisal by faculty if not supported with proper documents
A


A
Consolidated Self-Appraisal of Faculties
Performance of Each Faculty Analysed By Dean & Recommendations
Career Progression to Faculty as Applicable



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

Total Marks 10.00

Institute Marks : 10.00

Department of Electronics and Communication Engineering has two Emeritus Professors: Dr.V.P.Mohandas and Dr.T.R.Padmanabhan. The expertise of the above two persons are utilized for the under graduate course in B.Tech Electronics and Communication Engineering, as guest lectures and workshops. A list of topics interacted with the final year students of those respective academic years is listed in table 5.10.A and 5.10.B. Exclusive dates are reserved depending on their schedule, and the final years students' classes are arranged suitably for those days. Half a day sessions are the usual norm.

Dr.V.P.Mohandas			
Academic year	**Dates**	**Hours**	**Topics**
2016 -2017	21/01/2017	3	Signal Processing Concepts for Financial Engineering
	23/01/2017	3	
	25/01/2017	3	
	27/01/2017	3	
	01/02/2017	3	Prediction and Analysis – Societal Applications an Future Scope
	03/02/2017	3	
	07/02/2017	3	
	08/02/2017	4	Data Industry – An Insight
2017- 2018	07/07/2017	4	Financial Engineering – An Introduction
	10/07/2017	3	
	22/07/2017	3	Signal Processing Perspective to Financial Management
	25/07/2017	4	
	31/07/2017	4	
	04/08/2017	4	Stock Market Prediction – A Signal Processing Approach
	11/08/2017	3	
	14/08/2017	3	
2018-2019	21/12/2018	3	Financial Engineering and ECE Students
	24/12/2018	3	
	04/01/2019	4	Stock Market data and Time Series Analysis
	08/01/2019	4	
	19/01/2019	3	Mathematical Basis required for Data Mining
	22/01/2019	4	
	02/02/2019	5	
	25/02/2019	4	What to Expect in Data Industry?

Table. 5.10.A. List of Topics – Dr.V.P.Mohandas

Dr.T.R.Padmanabhan

Academic year	Dates	Hours	Topics
2016 -2017	22/07/2016	3	Video Signal Processing
	29/07/2016	4	Error Control Coding –From Academia To Industry
	01/08/2016	4	
	04/08/2016	3	
	12/08/2016	4	Microcontroller – Programming for Real Time Applications
	18/08/2016	3	
	19/08/2016	3	
2017- 2018	03/01/2018	3	VLSI Industry – An Insight
	22/01/2018	3	What is VLSI Technology
	23/01/2018	3	
	07/02/2018	3	Verilog and VHDL – From Academia to Industry
	08/02/2018	3	
	09/02/2018	3	
	27/02/2018	3	FPGA Implementation – Issues and Solutions
	28/02/2018	4	
2018-2019	13/07/2018	3	Signal Processing for Industry – Expectations from ECE Students
	14/07/2018	2	
	27/07/2018	2	VLSI Industry and ECE Students
	08/08/2018	4	Verilog and VHDL – From Academia to Industry
	09/08/2018	3	
	10/08/2018	3	
	03/10/2018	4	FPGA Implementation – Issues and Solutions
		4	

Table. 5.10.B. List of Topics – Dr.T.R.Padmanabhan

6 FACILITIES AND TECHNICAL SUPPORT (80)

Total Marks 80.00

6.1 Adequate and well equipped laboratories, and technical manpower (40)

Total Marks 40.00

Institute Marks : 40.00

Sr. No	Name of the Laboratory	Number of students per set up(Batch Size)	Name of the Important Equipment	Weekly utilization status(all the courses for which the lab is utilized)	Technical Manpower Support		
					Name of the Technical staff	Designation	Qualification
1	Digital Design l	3	Oscilloscope,	55.25%	Ms.R.Smitha	Instructor	DECE
2	Electronic Circı	3	Oscilloscope ,	53.5%	Mr. D. Dineshk	Senior Lab Ass	DICE
3	Communicatior	3	CRO, Digital Si	48.25%	Mr. N. Prabhu /	Senior Instructı	BE / BE
4	Microwave & A	3	Klystron Bench	51.75%	Mr. P. Raja	Senior Lab Ass	BE
5	Microprocesso	1	Personal Comp	43.25%	Ms. R. Sudha	Senior Instructı	DECE
6	Electronics Hai	3	CRO, Function	60%	Mr. M. G. Santl	Senior Instructı	DECE,MBA / D
7	VLSI Design La	1	Personal Comp	43.5%	Ms.K.Anitha	Senior Lab Ass	DECE, BCA
8	Digital Signal P	1	Personal Comp	4%1.5	Mr. B Chandras	Senior Instructı	BE

6.2 Laboratories maintenance and overall ambiance (10)

Total Marks 10.00

Institute Marks : 10.00

Laboratories maintenance and overall ambiance

- Lab is occupied with an area of **12861.05 Sq. feet**
- Well-equipped 15 work tables are there for doing the experiments.
- Every Semester Consumable items will bepurchased according to the requirements.
- First aid box is placed in easily accessible place.
- Students are disciplined to follow the safety procedures.
- Projector is available in according to requirement in labs.
- Book shelf for keeping files and records.

Maintenance of Equipment's

- Service required through mail
- Confirmation of Service in individual labs
- Service segregated as per company
- Service quotation requested/ received
- Permission from Dean through HOD
- Confirmation mail send to company
- Equipment serviced at campus
- Serviced Bill Send to accounts through HOD & Dean

Sl.No	Name of the Laboratory	Area in Square meter	Area in Square feet

1	Digital Design Laboratory (A101, AB-II)	164.66	1772.38
2	Electronics Circuits Laboratory (A103,AB-II)	165.14	1777.55
3	Communication Engineering Laboratory (A201, AB-II)	165.71	1783.69
4	Microwave & Antenna Laboratory (C101, AB-II)	164.22	1767.65
5	Microprocessor Laboratory/ATMEL MCU CENTER (C104, AB-II)	108.14	1164.01
6	Electronics Hardware Laboratory (C107, AB-II)	165.33	1779.50
7	VLSI Design Laboratory – UG (D301, AB-II)	137.24	1477.24
8	Digital Signal Processing Laboratory (D302, AB-II)	124.4	1339.03

6.3 Safety measures in laboratories (10)

Total Marks 10.00

Institute Marks : 10.00

Sr. No	Laboratory Name	Safety Measures
1	Digital Design Laboratory (A101, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
2	Electronics Circuits Laboratory (A103,AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
3	Communication Engineering Laboratory (A201, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
4	Microwave & Antenna Laboratory (C101, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
5	Microprocessor Laboratory/ATMEL MCU CENTER (C104, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
6	Electronics Hardware Laboratory (C107, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
7	VLSI Design Laboratory – UG (D301, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team
8	Digital Signal Processing Laboratory (D302, AB-II)	• Fire Extinguisher • First Aid Box • Miniature Circuit Breakers and separate distribution boxes • Following Safety precautions • Emergency Exit • Proper Earthling • Periodic maintenance by dedicated Electrical team

6.4 Project laboratory (20)

Total Marks 20.00

Institute Marks : 20.00

Sl. No	List of Project Laboratory	Brief write-up	List of projects title

1. 1	VLSI Lab- UG	VLSI Design lab caters the requirement of system modeling through VHDL, circuit analysis through SPICE and hardware prototype emulation using FPGA evaluation kits. In addition to this several projects in domains like VLSI testing, security, design and automation is carried out using industry standard EDA tools from Synopsys, Xilinx and Hardware from Digilent, Xilinx, National Instruments.	1. Output Based Segmentation Algorithm to Detect Malicious Activity In 90nm Digital Circuits. 2. Secure Data Encryption and Decryption Through GSM For the Application of A Quadcopter With A TASER. 3. SOM with M-Estimators for Self-Consistency-Based Hardware Trojan Detection and Diagnosis 4. Resolving Primary Input Attack in Segment Specific Polynomial Approach for Detecting and Diagnosing Hardware Trojan 5. Design and Authentication of Digitally Secure Circuits Using Fingerprinting 6. Fault Analysis Based Logic Obfuscation Technique for Improved Hardware Security 7. Logic Obfuscation Employing Randomized Encoding of Combinational Logic and SOM Based Segmentation 8. Hardware Trojan Detection Using Effective Test Patterns and Selective Segmentation 9. State Variable Filter Design Using Improvised Particle Swarm Optimization Algorithm 10. Design Of V-Band Low Noise Amplifier Using Current Reuse Topologies 11. A Modified Scheme for Simultaneous Reduction of Test Data Volume and Testing Power 12. Test Data Volume Reduction Using Compressed Scan Mode Architecture 13. Floating Point Multiplier Using Vedic Mathematics 14. A Novel High-Speed Booth Multiplier 15. Reduction of Test Power Using Don’t-Care Filling of Transition Fault Test Vectors 16. Identification and Diagnosis of Multiple Stuck-At Faults Using Fault Element Graph with Reduced Switching Power 17. Design of A Low Power, High Speed Double-Tail Comparator 18. Modified Carry Select Adder for Power and Area Reduction 19. Modification of Undetectable Stuck-At Faults for Improving Fault Coverage

			20. Fault Diagnosis Using Automatic Test Pattern Generation and Test Power Reduction Technique for VLSI Circuits 21. Detection and Diagnosis of Hardware Trojan Using Power Analysis 22. A 5–7 GHZ Current Reuse and Gm-Boosted Common Gate Low Noise Amplifier with LC Based ESD Protection In 32 Nm CMOS 23. Hardware Security Through Fault Analysis Based Logic Encryption. 24. Hardware Trojan Detection Using Temporal Self Referencing and Compressive Sensing. 25. Effective Hardware Trojan Detection Using Front End Compressive Sensing. Toggle Count Based Logic Obfuscation
2.	Digital signal processing Lab	The Digital Signal Processing laboratory enables the students to simulate and experiment with digital signals and systems. Digital Signal Processing laboratory helps the students to learn, analyze and design various algorithms to perform Signal Processing on real world signals. Students can implement these algorithms using different computational platforms and DSP tools which will enhance their practical Signal Processing skills. The laboratory is equipped with software and hardware tools required for signal analysis. The laboratory has MATLAB 2019b and Vivado System Edition software's installed in 38 i5 Desktop PCs. The laboratory also consists of Xilinx Zynq – 7000 SOC Video and Imaging kit, ATLYS – Spartan 6 Design platform, ANVYL – Spartan 6 development kit, Nexus 3 – Spartan 6 FPGA Board and Analog Discovery Kit for Signal Acquisition and Processing.	1. Blood Group Determination Using Vivado System Generator in ZynqSoC 2. White Blood Cell Counter using Xilinx ZynQ 7000 SoC 3. Hardware software co-simulation of IIR filter using Xilinx system generator for FPGA implementation 4. Segregation of Plastic and Non-plastic using Deep Learning 5. Autonomous Bot to detect diseased leaves in plants 6. Integrated framework for emergency Vehicle alert system and traffic Management 7. Automated Billing System 8. Autonomous Seed Sowing Robot 9. Propagation Tray Seeding System 10. Programmable Multi-Nutrient Delivery System 11. Internet of Things based approach for Open Precision Farming 12. Emergency Automated Medicine Dispensing Machine using Data Mining Approach for Effective Stocking and Stacking of Medicines 13. Area Based Cruise Control and Tablet Infotainment System 14. Automated Attendance Machine

3.	Microwave & Antenna Lab	The Radio Frequency and Microwave laboratory was established in the year 1996. The lab is equipped with full-fledged X band wave guide bench with Klystron and Gunn based microwave sources and Scalar power meter. A RF signal generator in the range 34MHz- 4.4GHz and receiver in the range 34MHz- 8.8GHz is presently added. Together with the waveguide peripherals including directional couplers, magic tees, circulators, tuners provide an excellent set up for the students to get a real time feel of wave propagation concepts and its applications. A complete VHF antenna measurement system was commissioned in the year 2004 with a variety of antennas including dipoles, monopoles, and loop structures. The lab has five personal computer systems to provide exposure to the students in the area of electromagnetic simulation employing software. Apart from catering to the regular academic laboratory requirements, students are exposed to innovative experiments involving radar cross section and microwave material characterization. Over the last three years, the lab has undertaken rigorous research and development activities in the area of electromagnetic characterization of fly ash and development of antennas on cylindrical substrates. This has resulted in a good number of publications in reputed international journals including Electromagnetics (Taylor and Francis), Applied Mechanics and Materials, and international conferences like INCEMIC. Over the next three years, it is proposed to have a fully developed microwave instrumentation for exploring the possibility of undertaking external funded projects and consultancy activities in the area of electromagnetic material characterization and developing EM based Nondestructive Testing techniques for Agricultural and Food products.	1. Design of Low-Cost Rubber Based Electromagnetic Wave Absorber 2. Integrating Electronics on Plywood substrate for Marine Applications. 3. Low Cost Coir Based Patch Antenna for Electric Vehicle Charging 4. Non –destructive Techniques for Quality Estimation of Coir Pith 5. Capacitance based Non-Destructive Technique for Quality Estimation of Turmeric 6. Capacitance based Non-Destructive Technique for Post-Harvest Sugarcane Quality estimation 7. EM Absorption Characterization of Cement Mortar Composites Loaded with Mild Steel Scrap 8. Design and Development of Planar Microstrip Antennas on Cement Substrates for Field Monitoring Applications 9. Microwave Reflectometry Study for Quality Monitoring of Asphalt Concrete 10. Analyses of EM Shielding Effectiveness of Blister Pack Loaded Cement Composites
4.	Microprocessor Lab	The microprocessor lab enables the students to experience different processor architectures through the experiments conducted on simulators and development boards. The lab is equipped with the hardware and software tools for ARM - 32 architecture as well as 80858-bit architecture. The list of experiments also includes the interfacing with peripherals, enable the students to understand the basics of interfacing.	1.Localization and Path Planning of Autonomous Mobile Robot Using Soft Computing Techniques 2.IR Based Driver Fatigue Detection System 3.Providing Vision to Quadcopter Using Proximity Sensors
5.	VLSI Lab- PG	The lab facilitates device and system designing and characterizing facilities for PG and research projects in addition to the curriculum requirements. VLSI Design lab caters the requirement of system modeling through VHDL, circuit analysis through SPICE and hardware prototype emulation using FPGA evaluation kits. In addition to this several projects in domains like VLSI testing, security, design	1. An Efficient High-Speed Max-Log-Map Decoder 2. Implementation of An Area Efficient Max-Log Map Algorithm 3. Modelling of Carbon Nanotube and Multi-Gate A-Gnr Tunnel Field Effect Transistors In Verilog-A

			and automation is carried out using industry standard EDA tools from Synopsys, Xilinx and Hardware from Digilent , Xilinx, National Instruments.	4. An Approach of Testing A System-On-Chip Using Scan and Automatic Test Pattern Generation 5. Improving Diagnostic Test Coverage from Detection Test Set for Logic Circuits 6. Design of Low power Direct Conversion Receiver At 60 GHz 7. A Fully Reused VLSI Architecture of Fm0, Manchester And Miller Encoder with Transmission Gate Logic for DSRC Applications 8. An Efficient Linear Pipeline Circuit with Optimal Power Delay Product Using Soft Edge Flip Flops 9. Compressive Sensing for Trojan Detection Using Time-Based Side Channel Technique At The Output End 10. Integration of Antenna with Lna And Power Amplifier 11. Securing from Power And Data Leakage Through Wddl And PufTrng Technique 12. An Efficient Design of a Mac Unit And Its Impact On A Trained Neural Network 13. An Efficient Fused Floating-Point Dot Product Unit Using Vedic Mathematics. 14. Reconfigurable Lut Based Dynamic Obfuscation for Hardware Security 15. Hardware Design of a Reliability Based Decoding Algorithm for Short Block Length Turbo Codes 16. Design and Analysis of Oscillator Using High-Q Siw Resonator 17. Hardware Trojan Detection and Diagnosis Through Synthesis and Validation Using Game Theory 18. Pattern Generation and Test Compression Using Presto Generator 19. FPGA Implementation of An Area Efficient Matrix Code and Decimal Matrix Code with Encoder Reuse Method 20. Fingerprint Based Detection of Hardware Trojan In VLSI Circuit 21. Design of An Enhanced Array Based Approximate Arithmetic Computing Model for Multipliers and Squarer’s 22. Sharing of Test Sequences Among Logic Circuits for Test Compaction

6.	Biomedical Instrumentation Laboratory	The Biomedical Instrumentation Laboratory at Amrita VishwaVidyapeetham was established in 2013. The laboratory is dedicated to the design, development and fabrication of innovative biomedical technologies. It provides a platform for students to explore and prototype the designed and simulated concepts. The lab is equipped with biomedical signal generators / simulators, powerful simulation software and facilities for prototyping of biomedical circuits and acquisition and processing of biomedical signals like ECGs and PPGs. The laboratory supports the work of advanced undergraduate, graduate, and doctoral students.	1. Analysis of a Contactless ECG Monitoring System 2. Design and Implementation of a Calibration - Free Pulse Oximeter. 3. Simulation Study of a Contactless, Capacitive ECG System. 4. Simulation of a Multi-Strip Blood Glucometer. 5. The Development of Smartphone Ophthalmoscope Diabetic Retinopathy Grading System. 6. Multi-parameter Biomedical Signal Generator 7. Study on Correlation Between Hemoglobin Content and PPG Output. 8. Design and Implementation of a Portable Colorimeter. 9. Study on Different Techniques of Pulse Oximetry 10. Fetal ECG Extraction 11. Determination of Pulse Transition Time 12. Multi-Parameter Patient Monitoring System
7.	Communication System Design Laboratory	The CSD lab facilitates students, research scholars and Faculty to conduct simulation studies in areas of signal processing, communication and RF subsystems as part of academic and research activity. The computational resources widely used are Python, MATLAB, GNU radio, Ansoft HFSS. Also, hardware kits such as Universal Software Radio Peripheral (USRP), RTL -SDR, Mixed Domain Oscilloscope (MDO) are available for performance studies of real-time communication systems	1. Design and Analysis of PD-NOMA based Interference Cancellation Techniques 2. Emulation of Satellite Communication for MIMO Channel Equalization by Software Defined Radio 3. Spectrum sensing using Sparse Bayesian Learning 4. Cooperative MIMO with Relay Selection for 4G LTE Advanced System 5. Building Detection and Extraction from LiDAR Point Cloud Data 6. Design and Analysis of Dual Frequency Quarter Wave Shorted Microstrip Patch antenna for Satellite MIMO. 7. Design and Development of Low-Profile Substrate Integrated Dielectric Resonator Antenna for Space Application

8.	Machine Intelligence Lab	Machine Intelligence Research Lab. focuses its research activities on Spoken Language Processing, Machine Fault Identification, and on the development of Bio-medical engineering applications. In spoken language processing, we focus our research on multilingual speaker recognition, speech recognition, spoken language identification, speech non-speech detection and speech recognition for dysarthric patients. In machine fault identification, our current research focus is on capturing intelligence about the faults in a speed and system independent manner. Development of robust tools for ICU patient monitoring, Stress/anxiety disorder identification, Sleep apnea screening, early detection of cardiac disorders, retinal fundus image processing is the focus of our research in Bio-medical engineering. The lab research also focuses on improving healthcare support for rural communities in India.	1. Development of Text/Language Independent Speaker Recognition System-DRDO 2. Scalable Fault Models for The Prognosis And Diagnosis Of Generator In Aircraft Electrical System 3. TCS Research Scholarship- TCS 4. Machine Independent Fault Diagnosis – DST 5. Improving Healthcare Support for Rural Communities in India – Arts And Humanities Research Council (Ahrc), United Kingdom. Collaborated with Cardiff Metropolitan University, UK and University of Agder, Norway
9.	Hardware Security Lab	Hardware Security Lab sponsored by SAG, DRDO facilitates the research work requirements in the area of Hardware Security & Trust. The lab is equipped with cutting edge hardware's from Xilinx, Digilent and EDA tools from Synopsys, National Instruments. PG students and Research scholars use this lab extensively for prototyping design and validation of secured hardware, algorithm development and testing.	1. Enhanced Hardware Trojan Detection and Prevention Techniques to Ensure a Secured Hardware with Improved Performance Metrics 1. 2. Security Enhanced Testing Using Scrambling and Test Compression 2. 3. CRC-Based Hardware Trojan Detection for Improved Hardware Security 3. 4. Virtual Instrumentation-Based Malicious Circuit Detection Using Weighted Average Voting 4. 5. Random Seeding LFSR-Based TRNG for Hardware Security Applications 5. 6. Hardware Malicious Circuit Identification using Self Referencing Approach 6. 7. Design and Analysis of Analog TRNG Using Sample and Hold Circuit 7. 8. HD-Sign: Hardware based Digital Signature Generation using True Random Number Generator 8. 9. Delay-Based Reference Free Hardware Trojan Detection using Virtual Intelligence 9. 10. HAPMAD: Hardware-based Authentication Platform for Malicious Activity Detection in Digital Circuits 10. 11. Hardware Trojan Detection using Game Theory 12. Hardware Trojan Detection & Consistence based Diagnosis Scientific Analysis Group (SAG), DRDO.
10.	Smart Integrated Electronics and Radiating Systems (SIERS) Research Lab	The Smart Integrated Electronics and Radiating Systems (SIERS) Research Laboratory, with cutting-edge research infrastructure procured by means of research grants and funding by the National Instruments Corporation USA, and	1. IOT Based Real Time Vehicle Vital Parameter Monitoring and Analytics. 2. Low Cost Solution For 3D Mapping of Environment Using 1D LIDAR for Autonomous Navigation.

			the DST of Gov. India. The lab is located in a radio-quiet zone that is imperative to conduct frontline research currently being pursued in the following areas: 1. Radio & RADAR Systems 2. Smart Biomedical Systems 3. Material Science for semiconductors and energetic materials 4. Electronics circuits and high-level synthesis 5. Digital Communications 6. Signal Processing 7. Nuclear Radiation Sensors	3. A Machine Learning Based Approach to Driver Drowsiness Detection. 4. An Improved Driver Assistance System for Detection of Lane Departure Under Urban and Highway Driving Conditions. 5. A Deep Learning Approach to Electric Energy Consumption Modeling. 6. A Novel Traffic Sign Recognition System Combining Viola–Jones Framework and Deep Learning. 7. Camera-Based Object Detection, Identification and Distance Estimation. 8. Applicability of Deep Learning Models for Stock Price Forecasting an Empirical Study on Banker Data. 9. Real Time Detection of Speed Hump/Bump and Distance Estimation with Deep Learning Using GPU And ZED Stereo Camera. 10. Impact Analysis of LFM Jammer Signals on Stepped Frequency PAM4 RADAR Waveforms. 11.Effect of Waveform Coding on Stepped Frequency Modulated Pulsed Radar Transmit Signals. 12. Phase-Modulated Stepped Frequency Waveform Design for Low Probability of Detection Radar Signals. 13. Influencing High Frequency Trading Patterns In Highway Operator Stock Using Efficient V2V V2I C4 Solutions For Vehicular Networks. 14. Behavior Of 3-Axis Conformal Proximity Sensor Arrays for Restraint-Free, In-Vehicle, Deployable Safety Assistance. 15. Effect of Jammer Signal on Stepped Frequency PAM4 Radar Waveforms. 16. Design of Less-Detectable RADAR Waveforms Using Stepped Frequency Modulation and Coding. 17. FPGA-Based Heavy-Ion Beam Trajectory Estimation and Control for Superconducting Rf Cavity Resonator Applications. 18. Phase-Modulated Stepped Frequency Waveform Design for Low Probability of Detection Radar Signals 19. Simulation of Dual Polarization Radar for Rainfall Parameter and Drop Size Distribution Estimation.	

			20. A Holistic Approach to Evaluate EMI Shielding Characteristics of Carbon Nanotube-Based Polymer Composites.
11.	Computational Optimization And Innovation Lab (COIL)	COIL is lab setup in the department of ECE engaging in supporting curriculum for advanced experiments in the domain and pursuing academic as well as sponsored research from government agencies. The focus of the lab is to: 1. Energy and computationally efficient designs in signal processing and wireless communication. 2. Next generation mobile radio systems including 5G, mm wave, Cognitive radio Networks. 3. Wireless networks, cognitive radio, cooperative communications, multiple antenna systems, and interference modeling, 4. Customized and evolutionary optimization for large scale problems.	1. Optimization of Energy Harvesting Wireless sensor networks 2. Bio inspired algorithms for target detection in MIMO Radar 3. Symbol Obfuscation in Physical-layer Security in MIMO Systems 4. Energy Efficient Techniques for 3GPP Machine to Machine Communication 5. Target Localization in MIMO Radars using Compressed Sensing 6. Robust MIMO Detection in the presence of Channel Estimation Errors
12.	Information Processing and coding lab	The current research focus includes error control codes and applications of error control codes. Ongoing UG/PG/PhD projects are on Block and Convolutional Turbo codes, LDPC codes and BCH codes. Optimization techniques for decoding algorithms are also a focus of our research. Current research is also based on coded cryptographic scheme for reliable and secure communication. One of the future focuses of the group will be in the area of Genomic coding.	1. Reliability based soft Decision Decoding of Turbo codes for satellite communication (In collaboration with Space Application Center (ISRO), Ahmedabad). 2. Temporal trends and predictors of anterior thalamic ictal recruitment in human focal epilepsy (In collaboration with Department of Neurology, University of Alabama, USA).
13.	Cyber Physical system	The Cyber Physical Systems Lab aims at developing the hardware prototyping capabilities of students. The lab also focuses on connecting various sensors and actuators to the internet through Internet of Things technology. The lab is equipped with STM32 Nucleo, Arduino boards and different kinds of sensors and actuators for Embedded Hardware development.	1. Improving the Health Care Support System in rural Areas using IOT 2. Design of Control System for Autonomous Harvester based on Navigation Inputs 3. Automated Water Dispensing and Monitoring System

7 CONTINUOUS IMPROVEMENT (75)

Total Marks 75.00

7.1 Actions taken based on the results of evaluation of each of the COs, POs & PSOs (30)

Total Marks 30.00

Institute Marks : 30.00

POs Attainment Levels and Actions for Improvement- (2018-19)

POs	Target Level	Attainment Level	Observations
PO 1 : Engineering Knowledge			
PO 1	2.4	2.5	The overall target for PO1 was attained. The target level was not attained by the courses 15ECE111, 15ECE112, 15ECE213, 15ECE301, 15ECE304, 15ECE381, 15ECE311, 15ECE339, 15ECE385, 15ECE386, 15ECE374.
Action 1: Power point presentations incorporated for understanding concepts from a different perspective Action 2: Quizzes conducted for assessing the student's ability in understanding concepts Action 3: Revision before assessments under the guidance of course instructor / academically strong students			
PO 2 : Problem Analysis			
PO 2	2.4	2.47	The overall target for PO2 was attained. The target level was not attained by the courses 15ECE111, 15ECE112, 15ECE301, 15ECE304, 15ECE381, 15ECE311, 15ECE339, 15ECE385, 15ECE386, 15ECE495, 15ECE374
Action 1: Tutorials conducted to improve analytical and problem-solving skills Action 2: Collaborative learning in teams involving elite and weak students			
PO 3 : Design/development of Solutions			
PO 3	2.4	2.48	The overall target for PO3 was attained. The target level was not attained by the courses, 15ECE112, 15ECE203, 15ECE213, 15ECE301, 15ECE304, 15ECE311, 15ECE356, 15ECE339, 15ECE385, 15ECE495
Action 1: Assignments on design problems			
PO 4 : Conduct Investigations of Complex Problems			
PO 4	2.4	2.37	The overall target for PO4 was not attained. The individual courses which did not attain the target are 15ECE112 , 15ECE213, 15ECE304, 15ECE311, 15ECE387, 15ECE495
Action 1: Encourage term work that includes design of experiments and analysis of results to draw inferences Action 2: Demonstration given in courses including 15ECE112,15ECE213 and 15ECE311 for better visualization of concepts Action 3: Additional exercises in architectures and more tutorials in interfacing given in 15ECE304 for better understanding			
PO 5 : Modern Tool Usage			
PO 5	2.4	2.44	The overall target for PO5 was attained. The target level was not attained by the courses 15ECE311, 15ECE339, 15ECE385, 15ECE386, 15ECE495
Action 1: Technical training sessions provided to strengthen knowledge in tool usage			
PO 6 : The Engineer and Society			
PO 6	2.4	2.55	The overall target for PO6 was attained. The target level was not attained by the courses 15ECE311, 15ECE495.
Action 1: Debates arranged to develop the grasping and understanding capability			
PO 7 : Environment and Sustainability			
PO 7	2.4	2.33	The overall target for PO7 was not attained. The individual courses which did not attain the target are 15ECE495.

Action 1: Internships encouraged for better exposure and training

PO 8 : Ethics

PO 8	2.4	2.34	The overall target for PO8 was not attained. The individual courses which did not attain the target are 15ECE495
Action 1: Paper publication encouraged for interested students			

PO 9 : Individual and Team Work

PO 9	2.4	2.32	The overall target for PO9 was not attained. The individual courses which did not attain the target are 15ECE201, 15ECE381, 15ECE311, 15ECE344, 15ECE385, 15ECE495, 15ECE380
Action 1: Peer teaching to invoke interest in weak students Action 2: Group discussion facilitated to get better clarity in concepts Action 3: Seminars given in 15ECE2901 for better technical interaction among students and with faculty member			

PO 10 : Communication

PO 10	2.4	2.4	The overall target for PO10 was attained. The target level was not attained by the courses 15ECE201, 15ECE381, 15ECE311, 15ECE344, 15ECE385, 15ECE495, 15ECE380
Action 1: Student seminar encouraged for better technical interaction among the students and with the faculty member			

PO 11 : Project Management and Finance

PO 11	2.4	2.15	The overall target for PO11 was not attained. The individual courses which did not attain the target are 15ECE495, 15ECE380
Action 1: Mini Projects on recent technologies to motivate the students Action 2: Additional classes allotted to train the students in network modelling in the course 15ECE380 Action 3: Online courses provided in modelling system evaluation to enhance the quality of understanding in the course 15ECE380 Action 4: Assignments given in the course 15ECE380, on practical design aspects for better understanding			

PO 12 : Life-long Learning

PO 12	2.4	2.52	The overall target for PO12 was attained. The target level was not attained by the courses 15ECE111, 15ECE201, 15ECE301, 15ECE304, 15ECE311, 15ECE339, 15ECE385, 15ECE386, 15ECE495
Action 1: Encouraged self study in selected topics to inculcate the habit of independent learning			

PSOs Attainment Levels and Actions for Improvement- (2018-19)

PSOs	Target Level	Attainment Level	Observations
PSO 1 : Able to design, develop and analyze systems in signal processing, electronics, communication and computing			
PSO 1	2.4	2.55	The overall target for PSO1 was attained. The target level was not attained by the courses 15ECE112, 15ECE213, 15ECE301, 15ECE304, 15ECE381, 15ECE311, 15ECE339, 15ECE385, 15ECE386, 15ECE495, 15ECE374
Action 1: Encourage algorithm development / hardware implementation of systems to address applications in electronics and communication engineering			
PSO 2 : Able to demonstrate competency in research and innovations.			
PSO 2	2.4	2.76	The overall target for PSO2 was attained. The target level was not attained by the courses 15ECE213, 15ECE495, 15ECE371
Action 1: Encouraged participation in technical contests, hackathons, paper presentation etc.			

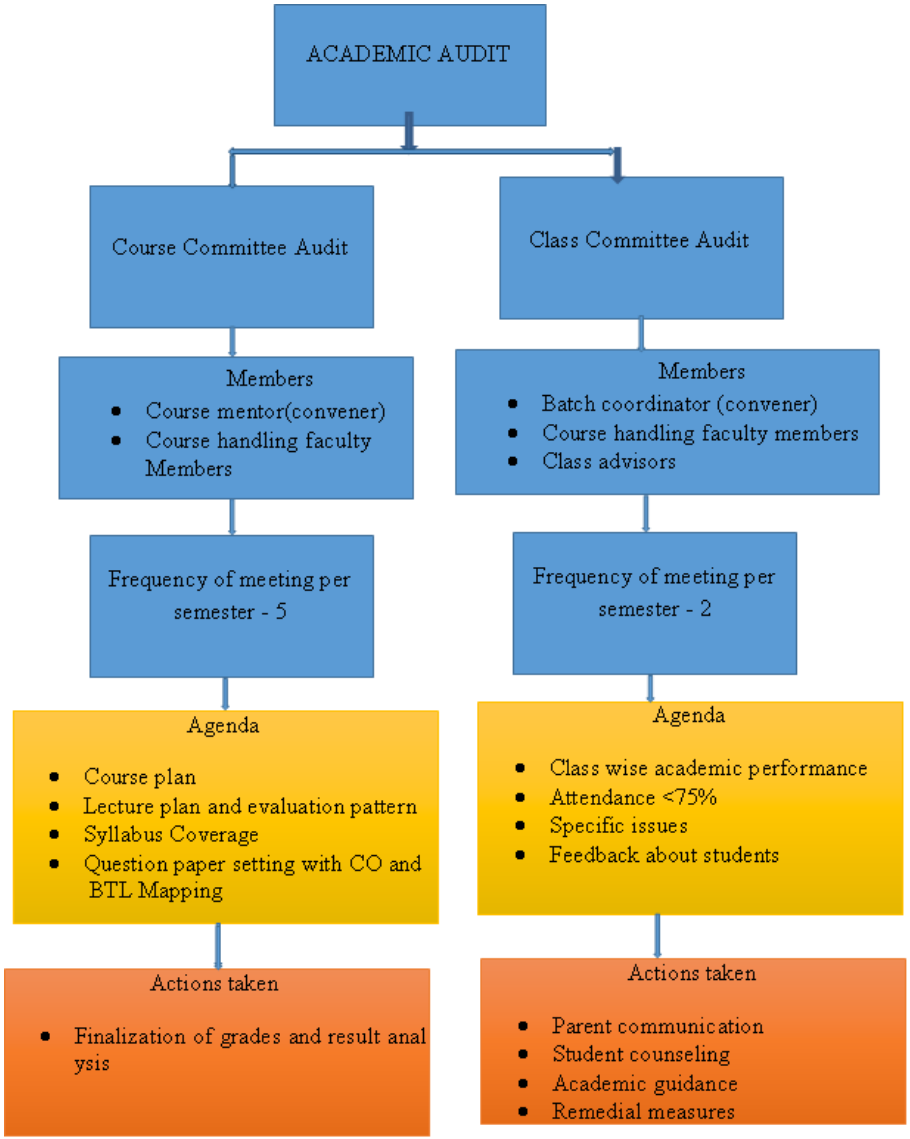
7.2 Academic Audit and actions taken thereof during the period of Assessment (15)

Total Marks 15.00

Institute Marks : 15.00

Academic Audit system/process and its implementation in relation to Continuous Improvement

udit	Assessment Criteria
Course committee	• Course plan • Lecture plan and evaluation pattern • Syllabus Coverage • Question paper setting with CO and BTL Mapping
Class Committee	• Class wise academic performance • Attendance <75% • Specific issues • Feedback about students



7.3 Improvement in Placement, Higher Studies and Entrepreneurship (10)

Total Marks 10.00

Institute Marks : 10.00

Improvement in Placement, Higher Studies and Entrepreneurship

Placement Details

Academic Year	Total no. of Students	Number of Students Placed	Placement Percentage
2018-2019	181	118	65.19
2017-2018	173	110	63.58
2016-2017	199	136	68.34
2015-2016	178	109	61.23

Placement Core- IT company Details

Academic Year	Total No. of Students Placed	No. of students placed in Core company	No. of students placed in IT company
2018-2019	118	41	77
2017-2018	122	31	91
2016-2017	157	59	98
2015-2016	150	68	82

Highest Salary Package Details

Academic Year	Core Companies	IT Companies
2018-2019	13.13 LPA	9 LPA
2017-2018	11.34 LPA	9 LPA
2016-2017	13.14 LPA	9 LPA
2015-2016	7.20 LPA	7.50 LPA

Higher Studies Details

Academic Year	No. Of students
2018-2019	10
2017-2018	12
2016-2017	27
2015-2016	43

7.4 Improvement in the quality of students admitted to the program (20)

Total Marks 20.00

Institute Marks : 20.00

Item		2019-20	2018-19	2017-18
National Level Entrance Examination	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
	Closing Score/Rank	0	0	0
State/ University/ Level Entrance Examination/ Others Amrita Entrance Examinatic	No of students admitted	178	193	259
	Opening Score/Rank	110	19	114
	Closing Score/Rank	27307	8362	17915
Name of the Entrance Examination for Lateral Entry or lateral entry details	No of students admitted	0	0	0
	Opening Score/Rank	0	0	0
	Closing Score/Rank	0	0	0
Average CBSE/Any other board result of admitted students(Physics, Chemistry&Maths)		168	181.54	180.61

8 FIRST YEAR ACADEMICS (50)

Total Marks 47.48

8.1 First Year Student-Faculty Ratio (FYSFR) (5)

Total Marks 5.00

Institute Marks : 5.00

Please provide First year faculty information considering load

Name of the faculty member	PAN No.	Qualification	Date of Receiving Highest Degree	Area of Specialization	Designation	Date of joining	Teaching load (%)			Currently Associated (Yes / No)	Nature Of Association (Regular / Contract)	Date Of leaving(In case Currently Associated is 'No')
							CAY	CAYm1	CAYm2			
MANJUSHREE	AHAPH5162K	MA	23/01/2016	Spiritual Studies	Assistant Professor	07/10/2017	100	100	100	Yes	Regular	
NAVEEN BHA	BVZPB1889F	M.A and Ph.D	14/10/2018	Spiritual Studies	Assistant Professor	20/08/2014	100	100	100	Yes	Regular	
PRAMOD KUM	ALLPM1017D	MA	29/11/2004	Spiritual Studies	Assistant Professor	01/09/2004	100	100	100	Yes	Regular	
AMBIKA P	AIQPA5583L	MA	19/08/1999	European Literature	Assistant Professor	17/07/2000	100	100	100	Yes	Regular	
PRIYA M.G	ASFPG7193P	M.A and Ph.D	10/08/2017	Indian Writing in English	Assistant Professor	01/07/2005	100	100	100	Yes	Regular	

SANDHYA V	AKSPV9734C	MA	08/07/2004	Indian Writing in English	Assistant Professor	28/07/2010	100	100	100	Yes	Regular	
SHOBANA K	BKZPS4297R	M.Phil	20/07/2005	Folk Literature	Assistant Professor	16/08/2010	100	100	100	Yes	Regular	
SUSHMA M.P	DEMPS1509M	MA	18/08/1998	Ancient Hindi Literature	Assistant Professor	19/01/2011	100	100	100	Yes	Regular	
TEENA V	AOSPT7052D	MA	28/07/2007	Minority Literature	Assistant Professor	11/07/2011	100	100	100	Yes	Regular	
NANDHINI I	AALPI4272R	M.Phil	14/07/2002	American Literature	Assistant Professor	16/04/2012	100	100	100	Yes	Regular	
AKILA J	BMVPA4063M	MA	17/05/2012	Childrens Literature	Assistant Professor	19/05/2014	100	100	100	Yes	Regular	
SARAVANA P	CXRPS5800C	M.A and Ph.D	17/08/2014	American Literature	Assistant Professor	02/06/2014	100	100	100	Yes	Regular	
AKHIL V.P	BPLPP8060E	M.A and Ph.D	15/07/2014	Post Colonial Literature	Assistant Professor	09/06/2014	100	100	100	Yes	Regular	
SUDAKSHINA	AXAPB5068L	MA	06/07/1990	Indian Writing in English	Assistant Professor	02/07/2014	100	100	100	Yes	Regular	
ANKUSHA BA	BPRPA9469J	MA	15/05/2012	Spritual Literature	Assistant Professor	02/02/2015	100	100	100	Yes	Regular	
MANDEEP BC	AREPB3585A	M.A and Ph.D	06/05/2015	Latin American Literature	Assistant Professor	09/09/2015	100	100	100	Yes	Regular	
SULAGNA MC	AWSPM1500F	M.A and Ph.D	07/09/2015	Post Colonial Literature	Assistant Professor	01/07/2016	100	100	100	Yes	Regular	
ASHA PRIYA	AHBPA5401H	M.A and Ph.D	07/09/2006	Indian Writing in English	Assistant Professor	27/06/2018	100	0	0	Yes	Regular	
BISWAMBHAR	AKQPR3058R	M.Sc. and PhD	19/10/2010	Nonlinear Dynamics and Chaos Theory	Assistant Professor	21/07/2016	100	100	100	Yes	Regular	
DEEPA MENO	AHHPD2170L	M.Sc. and PhD	07/08/2003	Statistical Quality Control	Associate Professor	02/01/2004	100	100	100	Yes	Regular	
GAYATHRI K	AOBPG7443L	M.Sc. and PhD	07/03/2018	Blood Flow in Large Arteries	Assistant Professor	01/02/2004	100	100	100	Yes	Regular	
SOMASUNDAI	AQLPS3456M	M.Sc. and PhD	05/09/2005	Graph Theory and Network on Chip	Professor	09/06/1997	0	0	0	Yes	Regular	
GEETHA J	ASDPJ4355Q	M.Sc. and PhD	08/03/2016	Graph Theory	Assistant Professor	08/05/2014	100	100	100	Yes	Regular	
HARIHARAN S	AEQPH6847G	M.Sc. and PhD	15/07/2007	Wavet Analysis	Assistant Professor	14/07/2016	0	0	0	Yes	Regular	

KIRUTHIKA S	CKFPK3768L	M.Sc. and PhD	05/08/2012	Fractional Differential Equation	Assistant Professor	03/02/2012	100	100	100	Yes	Regular	
KUMAR ABHI	AHSPA1760G	M.Sc. and PhD	07/07/2010	Graph Theory	Assistant Professor	15/07/2009	100	100	100	Yes	Regular	
MADHUSUDAI	AKMPN7588G	M.Sc. and PhD	01/03/2019	Numerical Analysis	Assistant Professor	02/05/2019	100	0	0	Yes	Regular	
MAHALAKSHM	CTVPM9255R	M.Sc. and PhD	05/01/2016	Coding Theory	Assistant Professor	16/11/2015	100	100	100	Yes	Regular	
MAROJU PRA	CHMPM8586C	M.Sc. and PhD	05/04/2014	Numerical Analysis	Assistant Professor	28/06/2017	100	100	100	Yes	Regular	
MURALI KRISI	ARGPP6368K	M.Sc. and PhD	05/07/2010	Finite Element Methods	Assistant Professor	06/01/2011	100	100	100	Yes	Regular	
PALANISAMY	ADRPT8923F	M.Sc. and PhD	15/08/2013	Wavelet Based Signal and Image Processing	Associate Professor	03/05/2002	100	100	100	Yes	Regular	
PARAMANATH	BKXPP7826F	M.Sc. and PhD	05/09/2011	Fractal Theory	Assistant Professor	15/11/2010	100	100	100	Yes	Regular	
PRAGADEESV	CFWPP5527C	M.Sc. and PhD	29/10/2015	Fixed Point Theory	Assistant Professor	01/06/2015	100	100	100	Yes	Regular	
PRAKASH P	DXRPP8847K	M.Sc. and PhD	25/12/2018	Fractional Calculus	Assistant Professor	15/12/2017	100	100	0	Yes	Regular	
PRAVEEN I	BDXPP8337C	M.Sc. and PhD	19/02/2019	Number Theory	Assistant Professor	21/07/2008	100	100	100	Yes	Regular	
PREMA G	AEMPP4338L	M.Sc. and PhD	25/02/1987	Lie Algebra	Professor	07/01/2016	0	0	0	Yes	Regular	
PUVANESWAI	BBPPP5248C	M.Sc. and PhD	30/09/2018	Heat Transfer	Assistant Professor	17/08/2005	100	100	100	Yes	Regular	
RADHA R IYE	AALPI9532Q	M.Sc. and PhD	06/06/2003	Graph Theory	Assistant Professor	02/06/2005	100	100	100	Yes	Regular	
RAJITHA C S	CWBPR2792H	M.Sc. and PhD	06/03/2019	Number Theory	Assistant Professor	02/05/2019	100	0	0	Yes	Regular	
RAMESHBABU	ASXPR0818C	M.Sc. and PhD	28/01/2010	Algebra	Assistant Professor	07/12/2018	100	0	0	Yes	Regular	
RAVICHANDR	ACQPR1333R	M.Sc. and PhD	20/07/1990	Six Sigma	Professor	01/11/2002	0	0	0	Yes	Regular	
SANTHAKUMA	GDZPS7926F	M.Sc. and PhD	06/05/2017	Algebra	Assistant Professor	02/05/2018	100	100	0	Yes	Regular	
SHAILENDHR	ANDPK8793J	M.Sc. and PhD	25/05/2003	Heat Transfer and Targeted Drug Delivery	Associate Professor	01/12/2006	0	0	0	Yes	Regular	

SREERANJINI	FVQPS0159L	M.Sc. and PhD	31/08/2014	Number Theory	Assistant Professor	11/06/2014	100	100	100	Yes	Regular	
SUBASH MOC	FPUPS2668N	M.Sc. and PhD	09/06/2014	Intergral Transform and Distribution Theory	Assistant Professor	02/06/2014	100	100	100	Yes	Regular	
SUKANTA NA	AMMPN7336G	M.Sc. and PhD	03/09/2006	Fuzzy Computation	Assistant Professor	05/07/2017	100	0	0	Yes	Regular	
SUMATHI I R	CFWPS1759H	M.Sc. and PhD	20/10/2017	Totoplogy	Assistant Professor	01/06/2018	100	100	0	Yes	Regular	
TAMILALAGAN	AZVPT0053E	M.Sc. and PhD	20/10/2017	Fractional Differential Equation	Assistant Professor	02/05/2017	100	100	100	Yes	Regular	
VINODKUMAR	ALPPV8964N	M.Sc. and PhD	08/09/2010	Differential Equations	Assistant Professor	01/06/2015	100	100	100	Yes	Regular	
ASHA SATHIS	AKEPA7858G	M.Sc. and PhD	20/01/2007	Fabrication of Electrodes	Assistant Professor	20/12/2003	100	100	100	Yes	Regular	
BHARAT KISH	CSOPS7482N	M.Sc. and PhD	25/10/2008	Theoretical Nuclear Physics	Assistant Professor	02/09/2014	100	100	100	Yes	Regular	
BOOPALAKRIS	AFXPB4102L	M.Sc	31/05/1994	Electro Chemistry	Assistant Professor	16/02/1996	100	100	100	Yes	Regular	
BOOPATHI T.S	AREPB0421D	M.Phil	03/05/2003	Organic Chemistry	Assistant Professor	10/08/2007	100	100	100	Yes	Regular	
DEEPAK O.M	AAFPO9498P	M.Sc	05/03/2003	Computatinal Chemistry	Assistant Professor	01/07/2011	100	100	100	Yes	Regular	
ELANGO K	AASPE8526F	M.Sc. and PhD	21/10/2009	Green Chemistry	Assistant Professor	04/07/2016	100	100	100	Yes	Regular	
GANGADHAR/	BFOPG4142K	M.Sc. and PhD	02/11/2012	Functional Polymers	Assistant Professor	10/07/2013	100	100	100	Yes	Regular	
KARTHEGA M	CFDPK4819K	M.Phil	06/06/2010	Bio Materials	Assistant Professor	12/05/2011	100	100	100	Yes	Regular	
LAKSHMI MO	ADIPL5426E	M.Sc	30/05/2004	Corrosion Inhibitors	Assistant Professor	21/07/2008	100	100	100	Yes	Regular	
MAHADEVAN	AHFPM8528B	ME/M. Tech and PhD	20/08/2009	Theoretical Nuclear Physics	Professor	16/11/1998	0	0	0	Yes	Regular	
MURUGADAS	BCQPM1563D	M.Sc. and PhD	18/07/2013	Bio Phonetics	Assistant Professor	15/06/2011	100	100	100	Yes	Regular	
NANDA KUMA	AVLPN9998E	M.Sc. and PhD	08/08/2009	Ceramics	Assistant Professor	24/07/2017	100	100	0	Yes	Regular	
POONGOTHA	AGAPP1465E	M.Sc. and PhD	30/08/2009	Corrosion Sciences	Assistant Professor	10/08/2007	100	100	100	Yes	Regular	

PRASANNA R	BCCPP4497B	M.Sc. and PhD	26/08/2006	Medicinal Chemistry	Associate Professor	02/03/2009	100	100	100	Yes	Regular	
PREMA P	AKZPP2514M	M.Sc. and PhD	25/08/2010	Nuclear Physics	Assistant Professor	20/10/1999	100	100	100	Yes	Regular	
RAJNI K.S	ACIPR8019G	M.Sc. and PhD	15/08/2011	Thin Flim Solar Cells	Associate Professor	01/09/1994	100	100	100	Yes	Regular	
RAMACHANDI	AANPR6968D	M.Sc. and PhD	30/06/1988	Bio Sensors	Professor	01/07/2011	0	0	0	Yes	Regular	
RAMANUJAM	BBZPB1778D	M.Sc. and PhD	30/05/2011	Material Sciences	Assistant Professor	19/06/2017	100	100	0	Yes	Regular	
RAMASUBRAI	ASCPR8597H	M.Sc. and PhD	15/07/2014	Material Sciences	Assistant Professor	20/06/2016	100	100	100	Yes	Regular	
SATHEESH BA	BFPPS1837G	M.Sc. and PhD	30/09/2009	Bio Sensors	Associate Professor	01/03/2004	0	0	0	Yes	Regular	
SATHYAJITH	AJAPT2178H	M.Sc. and PhD	01/04/2011	Atomic Physics	Assistant Professor	20/05/2011	100	100	100	Yes	Regular	
SIVAKUMAR I	BNFPS3253Q	M.Sc. and PhD	25/02/2007	Utra Fast Laser Interactions	Associate Professor	06/07/2007	100	100	100	Yes	Regular	
SIVASUBRAM	FIVPS3088G	M.Sc. and PhD	13/03/2012	Process Chemistry	Assistant Professor	27/11/2015	100	100	100	Yes	Regular	
SREEKANTH	BQQPK3069Q	M.Sc. and PhD	06/05/2013	Material Physics	Assistant Professor	05/09/2013	100	100	100	Yes	Regular	
SREEKANTH	BFCPV1908L	M.Sc. and PhD	16/12/2012	Quark Plasma	Assistant Professor	03/10/2017	100	100	0	Yes	Regular	
SUNEESH P.V	FOGPS2350N	M.Sc. and PhD	20/07/2015	Electro Chemical Bio Scesors	Assistant Professor	10/07/2013	100	100	100	Yes	Regular	
SWARNALATH	DLCPS4984P	M.Sc. and PhD	05/06/2014	Polymers	Assistant Professor	01/07/2015	100	100	100	Yes	Regular	
THILAGAVATH	ADSPT0553A	M.Sc. and PhD	07/01/2012	Chemistry	Assistant Professor	04/07/2008	100	100	100	Yes	Regular	
UMAMAHESW	ABAPU2897E	M.Sc. and PhD	03/02/2011	Nano Sciences	Assistant Professor	25/07/2002	100	100	100	Yes	Regular	
YAMUNA R	ABNPY0076E	M.Sc. and PhD	01/10/2005	Non Linear Optics Material	Associate Professor	02/08/2006	100	100	100	Yes	Regular	
PRIYANKA S	BWUPP0075P	M.A and Ph.D	28/07/2017	Yoga Philosophy	Assistant Professor	01/08/2019	0	0	0	Yes	Regular	
SENTHIL KUM	EVIPS1610F	MA	19/08/2017	Yoga Philosophy	Assistant Professor	05/07/2018	100	0	0	Yes	Regular	

SRIPAD H GH	AJHPG0018Q	M.A and Ph.D	17/08/2015	Yoga Philosophy	Assistant Professor	12/12/2012	100	100	100	Yes	Regular	
UPADYAYULA	FEXPS9517E	M.A and Ph.D	03/12/2012	Indian History Science and Vedic studies	Assistant Professor	09/07/2013	100	100	100	Yes	Regular	
PROBAL ROY	AGZPR6244E	MA	11/2/2014	Indian Hertitage	Assistant Professor	01/11/2012	0	0	100	No	Regular	31/03/2018
HARI M.G	ANPPH5965H	M.A and Ph.D	12/7/2015	Indian Writing in English	Assistant Professor	17/07/2015	0	0	100	No	Regular	04/05/2018
HARINI JAYAR	AAMPH6014M	M.A and Ph.D	7/9/2001	Indian Writing in English	Professor	15/11/1994	0	0	50	No	Regular	30/03/2018
GEETHA SEN	AGPPG5429A	M.A and Ph.D	13/9/2008	American Literature	Associate Professor	18/10/2004	0	100	100	No	Regular	30/04/2019
SUBEESH T	BIWPS1330L	M.Sc. and PhD	16/11/2015	Quantum Optics	Assistant Professor	31/08/2006	0	0	100	No	Regular	30/04/2019
VENKATA RAV	ALYPD7494G	ME/M. Tech and PhD	12/6/2013	Material Chemistry	Assistant Professor	16/06/2016	0	100	100	No	Regular	21/10/2018
JOHN STANLI	DKZPS6734R	M.Sc. and PhD	9/6/2016	Micro Fluids	Assistant Professor	02/05/2016	0	0	0	No	Regular	30/04/2019
VIJAYALAKSH	AHKPV1213D	MA	20/07/2017	Indian writing in English	Assistant Professor	11/04/2019	100	0	0	Yes	Regular	

Year	Number Of Students(approved intake strength) N	Number of Faculty members(considering fractional load) F	FYSFR (N/F)	*Assessment=(5*20)/FYSFR(Limited to Max.5)
2017-18(CAYm2)	1308	68	19	5
2018-19(CAYm1)	1308	70	19	5
2019-20(CAY)	1200	75	16	5
Average	1272	71	18	5

AverageFYSFR: 0.00

Assessment [(5 * 15) / AverageFYSFR]: 5.00

8.2 Qualification of Faculty Teaching First Year Common Courses (5) Total Marks 5.00

Institute Marks : 5.00

Year	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)	Assessment Of Faculty Qualification [(5x + 3y) / RF]
2017-18	57	15	65	5.00
2018-19	61	17	65	5.00
2019-20	66	18	60	6.00

Average Assessment: 5.33

8.3 First Year Academic Performance (10)

Total Marks 7.48

Institute Marks : 7.48

Academic Performance	CAYm1(2018-19)	CAYm2(2017-18)	CAYm3 (2016-17)
Mean of CGPA or mean percentage of all successful students(X)	7.40	7.34	7.71
Total Number of successful students(Y)	1094.00	1239.00	1103.00
Total Number of students appeared in the examination(Z)	1094.00	1239.00	1103.00
API [X*(Y/Z)]	7.40	7.34	7.71

Average API[(AP1+AP2+AP3)/3] : 7.48

Assessment = Average API : 7.48

8.4 Attainment of Course Outcomes of first year courses (10)

Total Marks 10.00

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)

Institute Marks : 5.00

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

Step 1:	Faculty sets the assessment question paper with CO mapping, BTL mapping and Marks of each question.
Step 2:	Faculty enters the step 1 data in Inpods software and the bundle number is generated. Bundle Number is the unique number (Spread sheet) for a exam for a particular course for a particular class.
Step 3:	The answer paper is evaluated by the faculty and is shared with the students for verification.

Step 4:	The front sheet of the answer paper which contains the question wise mark is torn and collected back by the faculty.
Step 5:	Faculty sends those front sheet along with bundle number generated in step 2 to the data entry team
Step 6:	Data entry team enters the marks of each students, question wise, in the Inpods software with the help of bundle number(spread sheet).
Step 7:	The entry will be done by the faculty for assignment and quiz in inpods.
Step 8:	Step 1 to Step 6 will be followed for Periodicals 1, Periodicals 2 and End Semester.
Step 9:	The Course Attainment-Direct is computed by the Inpods software.

The process followed at Amrita School of Engineering, Coimbatore for CO computation in a theory course is given in 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.

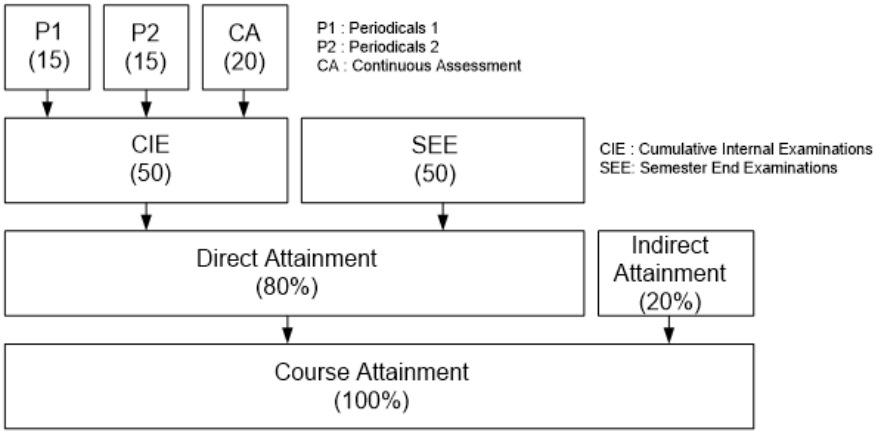
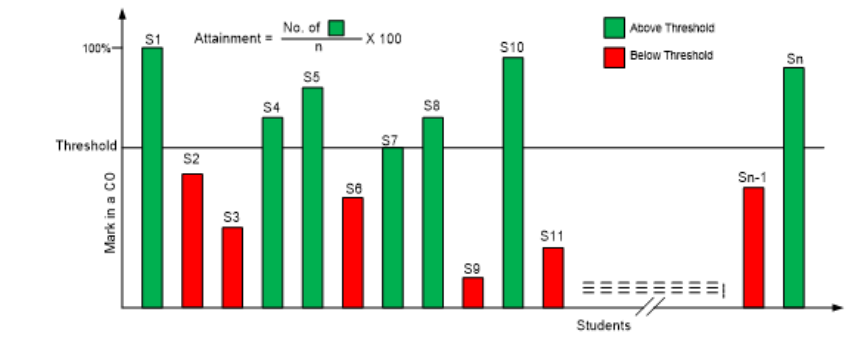


Figure 3.2.1 CO attainment for theory courses

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.

	
Indirect	Based on Survey $Attainment = \frac{\sum_{i=1}^{5} i * no.of\ students\ gave\ i\ option}{5 * no.of\ responses}$

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. 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.

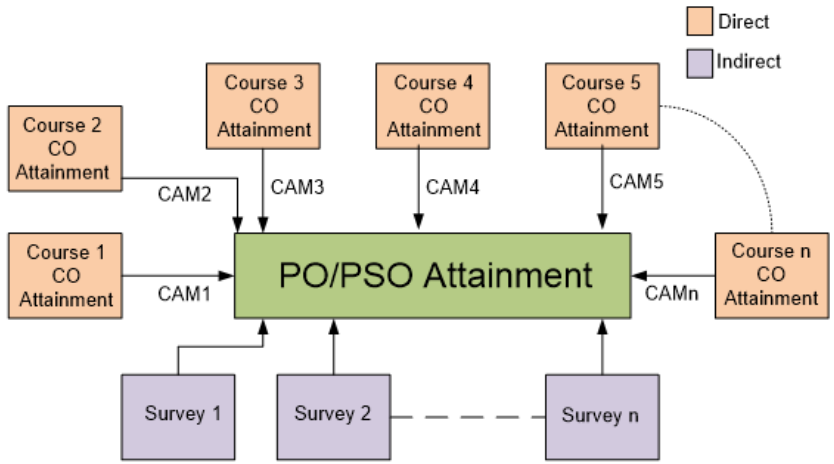


Figure 3.3.1. PO/PSO attainment

PO/PSO Attainment is Computed based on the following expressions

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

8.4.2 Record the attainment of Course Outcomes of all first year courses (5)

Institute Marks : 5.00

Program shall have set attainment levels for all first year courses

Level (3)	**>**	**60**
Level (2)	**>**	**40**
Level (1)	**>**	**0**

CO-Attainment Level Academic Year 2015-2016:

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	2.2	2.2	2.2				
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	2.27	2.27	2.27	2.27				
15CSE111	Computer Science Essentials	2.48	2.68	2.68	2.48	2.28	2.48		

15CSE180	Computer Programming Lab	1.95	2.15	2.15	1.95				
15CUL101	Cultural Education -1	2.61	2.69	2.69	2.61	2.53	2.60		
15CUL111	Cultural Education-2	2.50	2.50	2.50	2.50	2.50	2.50		
15ECE111	Solid State Devices	2.20	2.20	2.20	2.20	2.20			
15ECE112	Fundamentals of Electrical Technology	2.20	1.80	2.20	2.20	2.20	2.20		
15EEE111	Fundamentals of Electrical and Electronics Engineering	2.40	2.45	2.17	2.62	2.40	2.62		
15EEE180	Workshop B	2.39	2.39	2.39	2.39				
15ENG111	Communicative English I	2.98	2.98	2.98	2.98	2.98	2.70		
15MAT111	Calculus, Matrix Algebra	3.00	3.00	3.00	3.00	3.00	3.00		
15MAT121	Vector Calculus and Ordinary Differential Equations	2.41	2.44	2.39	2.34	2.42	2.45		
15MEC100	Engineering Drawing -CAD	2.71	2.71	2.71	2.71	2.71	2.71		
15MEC101	Engineering Drawing-CAD-II	2.89	2.89	2.89	2.89	2.89	2.89		
15MEC102	Engineering Mechanics	2.60	2.60	2.47	2.60	2.60			
15MEC111	Fundamentals of Mechanical Engineering	2.00	2.00	2.20	2.20	2.20			
15MEC180	Workshop A	2.74	2.71	2.72	2.71				
15CHY100	Chemistry	2.60	2.60	2.60					
15CHY181	Chemistry Lab.	2.78	2.78	2.78	2.78	2.78			
15PHY100	Physics	2.60	2.60	2.60					
15PHY181	Physics Lab	2.99	2.99	2.99					

CO-Attainment Percentage Academic Year- 2015-2016:

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	70.15					
15CVL112	Engineering Graphics-CAD	71.58	68.77	70.18	70.18	70.18			
15CSE100	Computational Thinking and Problem Solving	88.52	85.81	88.65	88.00				

15CSE102	Computer Programming	60.48	57.00	59.20	52.95				
15CSE111	Computer Science Essentials	67.64	77.77	69.04	75.16	70.36	67.79		
15CSE180	Computer Programming Lab	47.54	49.42	49.17	47.85				
15CUL101	Cultural Education -1	78.04	75.17	75.79	79.77	75.48			
15CUL111	Cultural Education-2	69.43	67.08	67.40	71.00	68.49			
15ECE111	Solid State Devices	55.26	57.26	59.87	66.89	66.89			
15ECE112	Fundamentals of Electrical Technology	54.66	51.96	57.80	57.80	69.04	69.04		
15EEE111	Fundamentals of Electrical and Electronics Engineering	64.41	63.85	70.19	82.28	75.36	77.32		
15EEE180	Workshop B	63.76	76.33	79.64	54.09				
15ENG111	Communicative English I	88.73	96.59	97.06	84.48	84.71			
15MAT111	Calculus, Matrix Algebra	80.02	85.97	87.21	82.57	84.66	85.82		
15MAT121	Vector Calculus and Ordinary Differential Equations	67.29	66.94	62.55	61.29	75.98	66.00		
15MEC100	Engineering Drawing -CAD	66.08	68.27	66.08	68.27	66.08	67.48		
15MEC101	Engineering Drawing-CAD-II	73.85	73.85	75.12	75.12	75.12	75.12		
15MEC102	Engineering Mechanics	87.70	77.59	68.75	85.59	72.54	88.42		
15MEC111	Fundamentals of Mechanical Engineering	45.60	44.17	48.46	79.17	69.89			
15MEC180	Workshop A	81.76	80.85	81.17	81.28				
15CHY100	Chemistry	62.20	66.59	67.06					
15CHY181	Chemistry Lab.	78.07	78.07	78.31	78.31	77.53			
15PHY100	Physics	66.19	66.72	64.52					
15PHY181	Physics Lab	94.14	94.14	94.14					

Sample Calculations of CO-Attainment:

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15MAT111	CO1	80.97	3	78.26	3	79.61	3.00	81.65	3	80.02	3.00	50.00	YES
	CO2	90.14	3	78.26	3	84.20	3.00	93.00	3	85.96	3.00	50.00	YES
	CO3	94.69	3	78.26	3	86.47	3.00	89.99	3	87.18	3.00	50.00	YES
	CO4	81.55	3	78.26	3	79.90	3.00	93.20	3	82.56	3.00	50.00	YES
	CO5	85.41	3	78.26	3	81.84	3.00	94.00	3	84.27	3.00	50.00	YES
	CO6	88.70	3	78.26	3	83.48	3.00	93.00	3	85.38	3.00	50.00	YES

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CHY100	CO1	69.23	3	55.60	2	62.41	2.50	61.34	3	62.20	2.60	50.00	YES
	CO2	77.80	3	55.60	2	66.70	2.50	66.17	3	66.59	2.60	50.00	YES
	CO3	78.97	3	55.60	2	67.28	2.50	66.17	3	67.06	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15PHY100	CO1	79.79	3	56.53	2	68.16	2.50	73.30	3	69.19	2.60	50.00	YES
	CO2	73.61	3	56.53	2	65.07	2.50	73.30	3	66.72	2.60	50.00	YES
	CO3	68.12	3	56.53	2	62.32	2.50	73.30	3	64.52	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

CO-Attainment Level Academic Year 2016-2017:

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	3.00	3.00	2.00	2.00	2.00	3.00		
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	2.00	2.00	2.00	3.00	3.00			
15CVL111	Introduction to Civil Engineering	3.00	3.00	3.00					
15CVL112	Engineering Graphics-CAD	3.00	3.00	3.00	3.00	3.00			
15CSE100	Computational Thinking and Problem Solving	2.95	2.95	2.95	2.95				
15CSE102	Computer Programming	2.80	3.00	3.00	2.80				
15CSE111	Computer Science Essentials	2.69	2.89	2.89	2.69	2.49	2.69		
15CSE180	Computer Programming Lab	2.27	2.47	2.47	2.27				
15CUL101	Cultural Education -1	2.60	2.60	2.60	2.60	2.60			
15CUL111	Cultural Education-2	2.58	2.58	2.58	2.58	2.58			
15ECE111	Solid State Devices	2.33	2.33	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	2.77	2.84	2.69	2.87	2.74	2.87		
15EEE180	Workshop B	2.76	2.76	2.76	2.76				
15ENG111	Communicative English I	2.79	2.79	2.79	2.79	2.79			
15MAT111	Calculus, Matrix Algebra	2.85	2.87	2.87	2.80	2.87	2.85		
15MAT121	Vector Calculus and Ordinary Differential Equations	3.00	2.97	3.00	3.00	3.00	3.00		
15MEC100	Engineering Drawing -CAD	2.96	2.97	2.97	2.96	2.95	2.96		
15MEC101	Engineering Drawing-CAD-II	2.95	2.95	2.95	2.95	2.95	2.95		
15MEC102	Engineering Mechanics	3.00	3.00	3.00	3.00	3.00			
15MEC111	Fundamentals of Mechanical Engineering	3.00	3.00	2.81	2.81	3.00			
15MEC180	Workshop A	2.77	2.85	2.82	2.85				
15CHY100	Chemistry	3.00	3.00	3.00					
15CHY181	Chemistry Lab.	2.72	2.72	2.72	2.72	2.72			
15PHY100	Physics	2.72	2.70	2.70					
15PHY181	Physics Lab	2.99	2.99	2.99					

CO-Attainment Percentage Academic Year- 2016-2017 :

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	71.19	71.19	54.24	49.15	57.63	62.71		
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	50.88	42.11	50.88	68.42	94.74			
15CVL111	Introduction to Civil Engineering	87.69	84.62	87.69					
15CVL112	Engineering Graphics-CAD	89.47	85.96	87.72	87.72	87.72			
15CSE100	Computational Thinking and Problem Solving	81.76	79.25	82.81	81.06				
15CSE102	Computer Programming	72.68	72.09	76.04	75.36				
15CSE111	Computer Science Essentials	76.31	81.91	78.36	76.10	77.58	69.85		
15CSE180	Computer Programming Lab	56.65	58.60	59.21	57.74				
15CUL101	Cultural Education -1	71.95	74.75	74.98	75.63	75.74			
15CUL111	Cultural Education-2	73.29	71.08	73.67	76.49	71.76			
15ECE111	Solid State Devices	58.08	58.59	61.62	60.61	61.11			
15ECE112	Fundamentals of Electrical Technology	75.70	75.70	75.70	75.70	83.94	83.94		
15EEE111	Fundamentals of Electrical and Electronics Engineering	78.19	77.54	85.13	88.50	81.05	80.58		
15EEE180	Workshop B	79.85	87.04	88.30	72.94				
15ENG111	Communicative English I	80.29	81.50	81.50	77.58	77.58			
15MAT111	Calculus, Matrix Algebra	74.51	78.74	67.56	75.19	82.51	76.40		
15MAT121	Vector Calculus and Ordinary Differential Equations	79.25	86.57	81.23	78.72	82.45	81.00		
15MEC100	Engineering Drawing -CAD	85.91	87.31	85.99	87.20	85.67	85.79		
15MEC101	Engineering Drawing-CAD-II	75.72	75.72	76.94	76.94	76.94	85.92		
15MEC102	Engineering Mechanics	83.03	78.54	78.13	85.07	82.22			
15MEC111	Fundamentals of Mechanical Engineering	71.51	68.06	68.06	66.68	76.34			
15MEC180	Workshop A	82.75	84.04	82.69	83.83				
15CHY100	Chemistry	75.89	77.85	77.11					
15CHY181	Chemistry Lab.	75.10	75.10	75.26	75.26	75.10			

15PHY100	Physics	72.37	69.55	70.69						
15PHY181	Physics Lab	91.44	91.44	91.44						

Sample Calculations of CO-Attainment:

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		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 (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		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	2.79	50.00	YES
	CO2	100.00	3	62.32	3	81.16	3.00	82.88	3	81.50	2.79	50.00	YES
	CO3	100.00	3	62.32	3	81.16	3.00	82.88	3	81.50	2.79	50.00	YES
	CO4	90.18	3	62.32	3	76.25	3.00	82.88	3	77.58	2.79	50.00	YES
	CO5	90.18	3	62.32	3	76.25	3.00	82.88	3	77.58	2.79	50.00	YES
	CO6												

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CHY 100	CO1	87.16	3	66.51	3	76.83	3.00	72.09	3	75.89	3.00	50.00	YES
	CO2	92.08	3	66.51	3	79.30	3.00	72.09	3	77.85	3.00	50.00	YES
	CO3	92.57	3	66.51	3	79.54	3.00	67.42	3	77.11	3.00	50.00	YES

CO-Attainment Level Academic Year 2017-2018 :

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	2.20	2.20	2.20	2.20	2.20	2.20		
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	2.90	2.90	2.90	2.90				
15CSE102	Computer Programming	2.80	2.92	2.57	1.88				
15CSE111	Computer Science Essentials	2.69	2.89	2.89	2.69	2.49	2.69		
15CSE180	Computer Programming Lab	2.34	2.54	2.54	2.34				
15CUL101	Cultural Education -1	3.00	3.00	3.00	3.00	3.00			
15CUL111	Cultural Education-2	2.54	2.47	2.49	2.42	2.42			
15ECE111	Solid State Devices	2.13	2.00	2.13	2.00	2.00			
15ECE112	Fundamentals of Electrical Technology	2.45	2.76	2.00	2.42	2.53	2.21		
15EEE111	Fundamentals of Electrical and Electronics Engineering	2.61	2.37	2.75	2.46	2.90	2.40		
15EEE180	Workshop B	2.36	2.36	2.36	2.36				
15ENG111	Communicative English I	3.00	2.52	3.00	3.00	2.82			
15MAT111	Calculus, Matrix Algebra	2.89	2.89	2.91	2.87	2.89	2.89		
15MAT121	Vector Calculus and Ordinary Differential Equations	2.94	2.94	2.96	2.94	2.92	2.94		
15MEC100	Engineering Drawing -CAD	2.95	2.95	2.95	2.95	2.95	2.95		
15MEC101	Engineering Drawing-CAD-II	3.00	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	2.40	2.40	2.40	2.40	2.40			
15MEC180	Workshop A	2.86	2.84	2.88	2.9				
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	2.97	2.97	2.97					

CO-Attainment Percentage Academic Year - 2017-2018:

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	43.17	48.25	46.98	46.98	49.52	50.79		
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	60.30	62.67					

15CVL112	Engineering Graphics-CAD	85.92	89.00	84.79	87.28	82.30			
15CSE100	Computational Thinking and Problem Solving	81.82	78.99	84.74	81.44				
15CSE102	Computer Programming	68.63	67.57	61.32	58.91				
15CSE111	Computer Science Essentials	74.83	79.43	77.76	76.22	73.70	71.88		
15CSE180	Computer Programming Lab	55.54	57.40	57.07	55.60				
15CUL101	Cultural Education -1	82.32	84.70	79.01	81.82	80.25			
15CUL111	Cultural Education-2	70.14	64.13	63.48	64.72	61.65			
15ECE111	Solid State Devices	52.71	50.06	51.51	50.50	51.58			
15ECE112	Fundamentals of Electrical Technology	59.16	65.92	52.15	65.92	87.42	64.65		
15EEE111	Fundamentals of Electrical and Electronics Engineering	67.15	61.62	67.26	70.46	80.02	69.29		
15EEE180	Workshop B	56.81	73.43	74.98	44.51				
15ENG111	Communicative English I	74.44	85.94	82.32	72.09	69.95			
15MAT111	Calculus, Matrix Algebra	74.92	80.05	70.37	75.18	83.83	78.58		
15MAT121	Vector Calculus and Ordinary Differential Equations	77.84	85.42	79.15	76.33	80.28	78.50		
15MEC100	Engineering Drawing -CAD	85.09	86.76	85.09	86.76	85.09	85.09		
15MEC101	Engineering Drawing-CAD-II	91.19	91.19	92.18	92.18	92.18	92.18		
15MEC102	Engineering Mechanics	84.62	84.65	81.35	92.11	84.98			
15MEC111	Fundamentals of Mechanical Engineering	69.94	61.79	72.16	90.68	68.46			
15MEC180	Workshop A	78.96	77.29	78.69	79.58				
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	93.81	93.67	93.87					

Sample Calculations of CO-Attainment:

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CUL 101	CO1	88.98	3	74.82	3	81.90	3.00	84.00	3	82.32	3.00	50.00	YES
	CO2	92.92	3	74.82	3	83.87	3.00	88.00	3	84.70	3.00	50.00	YES
	CO3	84.71	3	74.82	3	79.77	3.00	76.00	3	79.01	3.00	50.00	YES
	CO4	88.74	3	74.82	3	81.78	3.00	82.00	3	81.82	3.00	50.00	YES
	CO5	91.79	3	74.82	3	83.31	3.00	68.00	3	80.25	3.00	50.00	YES
	CO6												

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CHY 100	CO1	77.50	3	53.78	2	65.64	2.50	78.60	3	68.23	2.60	50.00	YES
	CO2	79.87	3	51.43	2	65.65	2.50	78.60	3	68.24	2.60	50.00	YES
	CO3	88.47	3	50.92	2	69.69	2.50	78.60	3	71.47	2.60	50.00	YES
	CO4												
	CO5												
	CO6												

Course	COs	Internal Examination (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		Attainment	Level	Attainment	Level	Attainment*	Level	Attainment	Level	Attainment	Level		
15CHY 181	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 (CIE)		End Semester Examination (SEE)		Direct 50% of CIE and 50% of SEE		Indirect		Final Course Attainment 80% of Direct and 20% of Indirect		Target (%)	Attainment Yes/No
		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												

CO-Attainment Level Academic Year - 2018-2019:

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	2.20	2.20	2.20	2.20	2.20	2.20		
15CHE111	Introduction to Chemical Engineering	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
15CHE112	Material Balances	2.20	3.00	3.00	3.00				
15CVL102	Mechanics: Statics and Dynamics	3.00	3.00	2.60	2.20	3.00			
15CVL111	Introduction to Civil Engineering	3.00	2.20	2.20					
15CVL112	Engineering Graphics-CAD	3.00	2.68	3.00	2.68	3.00			
15CSE100	Computational Thinking and Problem Solving	2.82	2.69	2.65	2.82				
15CSE102	Computer Programming	2.81	2.64	2.58	2.66				

15CSE111	Computer Science Essentials	2.60	3.00	3.00	3.00	3.00	3.00		
15CSE180	Computer Programming Lab	2.20	2.20	2.20	3.00				
15CUL101	Cultural Education -1	2.96	2.96	2.96	3.00	3.00			
15CUL111	Cultural Education-2	2.76	2.75	2.77	2.78	2.78			
15ECE111	Solid State Devices	3.00	3.00	2.50	2.50	2.81			
15ECE112	Fundamentals of Electrical Technology	3.00	3.00	2.60	3.00	3.00	3.00		
15EEE111	Fundamentals of Electrical and Electronics Engineering	2.76	2.53	2.25	2.42	2.54	2.25		
15EEE180	Workshop B	76.16	85.52	86.87	67.00				
15ENG111	Communicative English I	2.82	2.44	2.68	2.74	2.56			
15MAT111	Calculus, Matrix Algebra	2.82	2.91	2.84	2.89	2.89	2.92		
15MAT121	Vector Calculus and Ordinary Differential Equations	2.34	2.52	2.50	2.43	2.24	2.33		
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	3.00		
15MEC102	Engineering Mechanics	2.60	3.00	2.60	3.00	3.00			
15MEC111	Fundamentals of Mechanical Engineering	2.80	2.00	2.40	2.40	2.40			
15MEC180	Workshop A	2.68	2.91	2.93	2.76				
15CHY100	Chemistry	2.73	2.90	2.85					
15CHY181	Chemistry Lab.	3.00	3.00	3.00	3.00	2.95			
15PHY100	Physics	2.47	2.30	2.43					
15PHY181	Physics Lab	2.93	2.93	2.93					

CO-Attainment Percentage Academic Year - 2018-2019:

COURSE TITLE	COURSE	CO1	CO2	CO3	CO4	CO5	CO6	CO7	CO8
15AES111	Introduction to Aerospace Technology	43.17	48.25	46.98	46.98	49.52	50.79		
15CHE111	Introduction to Chemical Engineering	75.05	91.10	79.50	67.30	83.35	79.90	84.25	79.55
15CHE112	Material Balances	64.20	65.72	70.20	74.76				
15CVL102	Mechanics: Statics and Dynamics	84.40	73.84	90.19	72.18	88.78			
15CVL111	Introduction to Civil Engineering	91.49	74.08	73.04					

15CVL112	Engineering Graphics-CAD	85.91	89.00	84.79	87.28	82.30			
15CSE100	Computational Thinking and Problem Solving	76.64	70.27	75.81	72.84				
15CSE102	Computer Programming	71.93	65.70	73.27	69.02				
15CSE111	Computer Science Essentials	75.43	78.00	83.57	78.08	83.56	81.76		
15CSE180	Computer Programming Lab	88.55	88.40	85.76	87.61				
15CUL101	Cultural Education -1	77.92	79.41	80.76	87.82	87.68			
15CUL111	Cultural Education-2	76.48	76.26	76.61	77.34	81.31			
15ECE111	Solid State Devices	79.15	73.90	66.55	64.86	75.46			
15ECE112	Fundamentals of Electrical Technology	79.82	80.70	67.72	79.35	86.64	78.17		
15EEE111	Fundamentals of Electrical and Electronics Engineering	69.13	60.42	71.46	82.72	88.50	54.15		
15EEE180	Workshop B	2.82	2.82	2.82	2.82				
15ENG111	Communicative English I	51.80	76.06	72.09	49.15	47.31			
15MAT111	Calculus, Matrix Algebra	69.86	76.48	73.07	76.99	80.25	78.18		
15MAT121	Vector Calculus and Ordinary Differential Equations	69.76	71.03	71.67	72.11	66.56	60.97		
15MEC100	Engineering Drawing -CAD	80.29	77.01	77.03	74.18	83.34	76.86		
15MEC101	Engineering Drawing-CAD-II	80.67	80.67	85.78	79.55	68.10	85.57		
15MEC102	Engineering Mechanics	65.84	74.73	63.82	84.35	81.49			
15MEC111	Fundamentals of Mechanical Engineering	7.88	51.62	62.03	65.99	63.86			
15MEC180	Workshop A	77.35	86.61	87.65	79.45				
15CHY100	Chemistry	67.21	72.93	70.24					
15CHY181	Chemistry Lab.	92.39	90.47	91.25	91.82	68.90			
15PHY100	Physics	60.92	57.13	98.45					
15PHY181	Physics Lab	87.80	86.64	89.33					

8.5 Attainment of Program Outcomes from first year courses (20) Total Marks 20.00

8.5.1 Indicate results of evaluation of each relevant PO and/or PSO if applicable (10) Institute Marks : 10.00

POs Attainment:

Course	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
15AES	2.2	2.2	0	2.2	0	2.2	2.2	0	2.2	2.2	0	2.2
15CHE	3	3	0	3	3	0	0	3	0	0	0	0
15CHE	2.75	2.75	2.8	2.82	0	0	0	0	0	0	0	0
15CVL	2.76	2.76	0	0	0	0	0	0	0	0	0	0
15CVL	1.48	1.48	1.48	1.48	1.48	0	0	0	0	0	0	1.48
15CVL	2.87	2.87	2.87	2.87	2.87	0	0	0	0	0	0	2.87
15CSE	2.72	2.74	2.74	0	2.74	0	0	2.69	2.69	2.69	0	0
15CSE	2.67	2.63	2.63	0	0	0	0	0	0	0	0	0
15CSE	2.40	2.40	2.40	0	2.2	0	0	0	0	0	0	0
15CUL	0	0	0	0	0	2.98	2.98	2.98	2.98	2.98	2.98	2.98
15CUL	0	0	0	0	0	2.92	2.92	2.92	2.92	2.92	2.92	2.92
15ECE	2.76	2.76	0	0	0	0	0	0	0	0	0	2.76
15ECE	2.94	2.92	2.87	0	0	0	0	0	0	0	0	2.91
15EEE	2.47	2.50	2.26	0	0	0	0	0	0	0	0	0
15EEE	2.82	2.82	2.82	0	0	0	0	2.82	2.82	2.82	0	2.82
15ENG	0	0	0	0	0	0	0	2.56	2.44	2.67	0	2.63
15MAT	2.87	2.88	2.88	0	0	0	0	0	0	0	0	2.83
15MAT	2.39	2.46	2.42	0	0	0	0	0	0	0	0	2.43
15MEC	3.0	3.0	3.0	3.0	0	0	0	0	0	3.0	0	3.0
15MEC	3.0	3.0	3.0	3.0	0	3.0	0	0	0	0	0	3.0
15MEC	2.73	2.73	2.71	2.73	0	0	0	0	0	0	0	2.73
15MEC	2.4	2.4	2.36	2.27	0	2.4	2.4	0	2.4	0	0	2.4
15NEC	2.82	2.85	2.91	0	2.91	0	0	0	2.82	2.82	0	2.82
15CHY	2.73	2.9	2.85	0	0	0	0	0	0	0	0	0

15CHY	2.99	2.99	2.98	0	0	0	0	0	0	0	0	0
15PHY	2.4	2.4	0	0	0	0	0	0	0	0	0	2.4
PHY18	2.93	2.93	2.93	2.93	2.93	2.93	0	0	0	0	0	0
15CSE	2.96	2.96	2.96	0	0	0	0	0	0	0	0	0

PO Attainment Level

PSOs Attainment:

Course	PSO1	PSO2
Cxxx	PSO1	PSO2

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

Institute Marks : 10.00

9 STUDENT SUPPORT SYSTEMS (50)

Total Marks 50.00

9.1 Mentoring system to help at individual level (5)

Total Marks 5.00

Institute Marks : 5.00

Mentoring system to help at individual level

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

- ImproveAcademic performance.
- Develop a Research Orientation
- Guidance for Professional Career, Higher Studies & Skill Development
- Resolve Personal Issues: Behavioral; psychological
- Encourage Spirit of Innovation by motivating and training students to participate in Contests, Conferences, Projects and Internships
- Motivate to pursue Extra-curricular and Social activities

- Encourage students to participate in Cultural activities, Arts and Sports.
- Develop Personality and Character
- Foster Good Values, Healthy living and Discipline.

Student Portfolio

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

- Personal file: A detailed personal file is maintained in the School Administration Office, recording all relevant aspects of a student(Ref. B 9.1*). This is supplemented by two automated software.
- Amrita University Management System (AUMS) Software: A master database holding all academic records(Ref. 9.2*).
- Campus Management System (CMS): A database containing essential information, both academic (operational) and non-academic elements, required for effective mentoring and counseling of students at multiple levels. The information is stored as Work Registers, Counseling Diaries, Achievements, and Disciplinary actions(Ref. B 9.3*, 9.4*, 9.5* and 9.6*).

The Mentoring Structure

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

- **Class Advisors:** Class Advisors (CA) are appointed for every 20 students when the students join for the UG programme. Class Advisors so nominated hold the responsibility until the students complete the programme. The CAs will maintain all records of their respective wards assigned to them in the work register/ counseling diary in the CMS. They shall guide and counsel the students on maintaining good academic performance, attendance and discipline. They shall advise the students, monitor the courses undergone by them, monitor their performance in tests and also look into their personal difficulties. They guide students on internships and higher studies and facilitates the students wishing to pursue the various programmes offered by Amrita Centre for International Programmes (ACIP).Advisor also keeps track of Co-curricular, Extra Curricular achievements and Social activities. This will be frequently reviewed by the Department Chairperson. The CAs shall inform the parents regarding the academic progress and attendance percentages immediately after the periodical tests(Ref. B 9.7*& 9. 8*).
- **Class Committee**: Class committee comprises the Chairperson, Class Advisor and student representatives. This committee is formed with the overall goal of improving the effectiveness of the teaching-learning process. In the two meetings held in a semester immediately after the periodical tests, feedback is taken from the student members representing the entire class, so as to improve the teaching-learning process and also to address other issues/grievances. The chairperson and advisor disseminate important activities in the department such as schedule of placement training classes, participation of students in extracurricular and co-curricular activities, conferences and workshops, internship opportunities, industry training and also inviting volunteers for any planned central activities. The other aspects that may be addressed during the Class Committee meeting are:

- Resolve any issues faced by students in the class room/ laboratories.
- Clarify Rules & Regulations of the degree program.
- Discuss the academic progress and the coverage of syllabus.
- Analysis of student performance.
- Identify slow learners, if any, and plan necessary support measures.
- Track attendance shortage and caution students lacking the requisite percentage

- **Department AdvisoryCommittee**: The **Department AdvisoryCommittee**(DAC) formulates the vision, mission and PEOs of the Department. The Committee ensures collective responsibility of overall academic activities, programs, and performance of the department by taking measures to enhance quality of the teaching learning process. Committee will review the results of End Semester Examinations, frame strategies for enhancing staff development, teacher’s attitude to students, etc.

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

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

Academic Processes (Mentoring)

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

- **Orientation of Fresher’s (Academic)**

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

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

- **Programme Specific**

- Weekly Counseling Sessions: Counseling sessions are scheduled in the time-table. The faculty mentors discuss issuesrelated to academics and grades with the assigned students leading toimproved academic achievement in both theory and lab subjects (Ref. 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(Ref. 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 thestudent representatives duringthe 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 (FigureB9.1(a)). Categories of issues encountered are: interpersonal relationships, behavioral abnormalities, adjustment to the campus environment, emotional disturbances, family related problems etc.

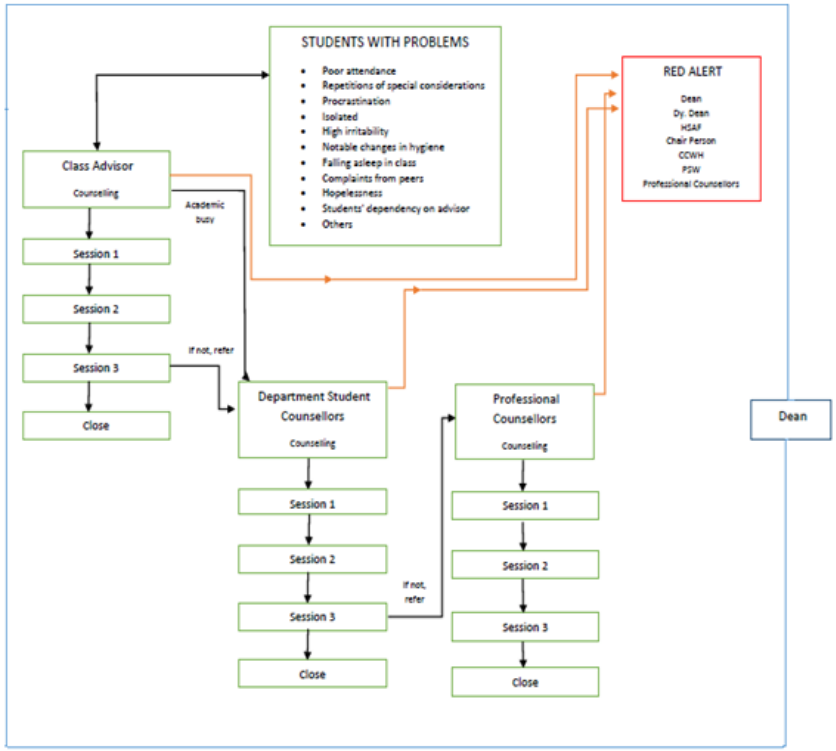


Fig.B.9.1(a) The Counseling Work Flow

The Counseling Structure

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

The Work Flow of Counseling Process

- Level-1:(Respective Class Advisors / Teaching faculty/ Hostel Wardens).At the first level, behavioral issues noticed by a warden or a class 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 invitedto render their support and cooperation for effective counseling of their wards. Cases needing psychiatric treatment are referred to premium hospitals in the City. A strategy for counseling and monitoring students, generally followed by Depts are given at Ref. B 9.12e*. Minutes of one Counselors Meeting of 27 Jun 2018 is given at Ref. B 9.12f*. Follow up action is given at Ref.B 9.12g*, Ref.B 9.12h* and Ref. B 9.12i*.

Student Support Extended for Value Based Education

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

Efficacy of Mentoring System:

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

- A gradual and systematic induction of the students assisted in effective transition to college life, reducing their sense of isolation and homesickness. This gave the students confidence to face the rigors of academics.
- The mentors provided impartial advice, individual and personal care and encouragement to the students all through their academic years. This created a positive work environment and developed a supportive relationship betweenstudentsand 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) Total Marks 10.00

Institute Marks : 10.00

Feedback analysis and reward/ corrective measures taken

Faculty Feedback analysis process

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

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

After the each periodical test a **class committee meeting** is convened in the presence of the Chairperson and the Class Advisor with the representatives of the class. 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 subject. All these points are noted down by the Class Advisor and report to the faculty. In case if the students find any subject very difficult it will be communicated to the concerned Chairperson.

Basis of reward / corrective measures

Faculty members who get feedback below 75% are identified and are given special inputs by the Chairperson of the Department. This is also discussed during the Department Advisory Committee. Chairperson monitors the performance of such faculty with the support of students. Also the faculty members who get an average feedback of above 90% are appreciated at the department level staff meetings. The faculty feedback analysis process is presented in Figure 9.2 (a)The questionnaire used for collecting faculty feedback from the students, used before the academic year 2018-2019 is shown in Table B.9.2 (a). The questionnaire which is used from the academic year 2018-2019 is shown in Table B.9.2. (b).

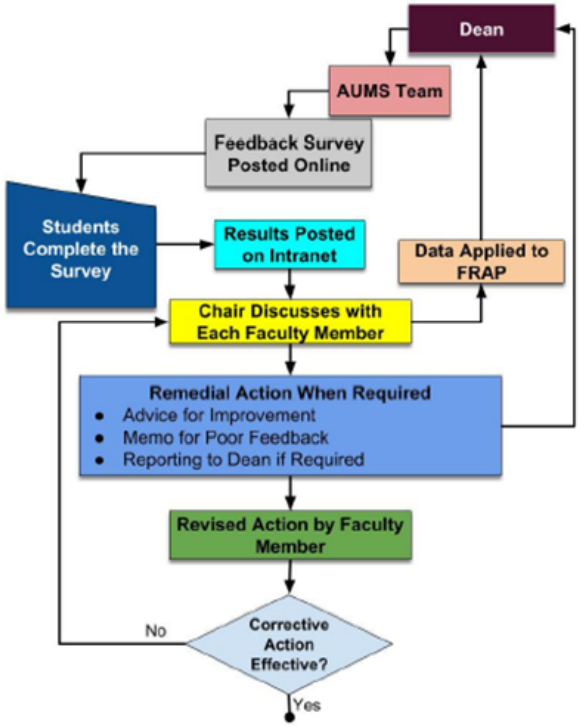


Figure 9.2 (a). Faculty Feedback analysis process

Table B.9.2 (a)The questionnaire for faculty feedback assessment (before 2018-2019).

Q.No	Questions	Options
1	Knowledge of the teacher in the subject.	Excellent
		Good
		Fair
		Poor
		Unable to Judge
2	Clarity and understandability of teachers explanations.	Excellent
		Good
		Fair
		Poor

		Unable to Judge
3	Teachers willingness to help the students.	Excellent
		Good
		Fair
		Poor
		Unable to Judge
4	Approximate percentage of classes not engaged by the teacher in the subject.	Less than 10%
		10% to 25%
		More than 25%
		Unable to judge
5	Whether the teacher dictates notes only without explanations?	Yes
		No
		Unable to Judge
6	Teachers ability to organize lectures.	Excellent
		Good
		Fair
		Poor
		Unable to Judge
7	Speed of presentation.	Just Right
		Too Fast
		Too Slow
		Unable to Judge
8	Behavior of the teacher.	Pleasant
		Indifferent
		Unpleasant
		Unable to Judge
9	Does the teacher encourage questioning?	No
		Sometimes
		Yes
		Unable to Judge
10	Sincerity of the teacher.	Sincere

		Not Sincere
		Unable to Judge
		Do not want to answer
11	Overall teaching effectiveness	Excellent
		Good
		Fair
		Poor
		Unable to Judge
12	I would like to take another course from this teacher.	Yes
		No
		Do Not want to answer
13	The teacher has utilized the CBT (Computer Based Training) facilities to improve the quality of the course delivery and teaching / learning experience, (e.g. Projector classes, AUMS, Online exams , quizzes, Discussion forums, etc.)	Less than 10%
		Between 10% and 50%
		Between 50% and 80%
		Above 80%
		Not applicable for this course
14	My intellectual curiosity has been stimulated by this course.	Yes
		No
		Do Not want to answer
15	Tests and papers are graded and returned promptly.	Yes
		No
		Not always
16	The instructor is approachable for the students.	Yes
		No
		Not always
17	Strength of the teacher (Special/Significant conspicuous remarks)	Text
18	Weakness of the teacher (Special/Significant conspicuous remarks)	Text

19	Any other information (Mannerism, peculiarities or anything relevant).	Text

Table B 9.2 (b) The questionnaire for faculty feedback assessment (2018-2019 Onwards).

Q.No	Questions	Options
1	How much of the syllabus was covered in the semester/year?	85 to 100%
		70 to 84%
		55 to 69%
		30 to 54
		Below 30%
2	How well did the faculty prepare for the classes?	Thoroughly
		Satisfactorily
		Poorly
		Indifferently
		Won’t teach at all
3	Faculty inform you about the expected competencies, course outcomes and programme outcomes	Every time
		Usually
		Occasionally/Sometimes
		Rarely
		Never
4	How well was the faculty able to communicate?	Always effective
		Sometimes effective
		Just satisfactorily
		Generally ineffective
		Very poor communication
5	The faculty approach to teaching can best be described as	Excellent
		Very good
		Good
		Fair
		Poor
6	Fairness of the internal evaluation process by the faculty.	Always fair

		Usually fair
		Sometimes unfair
		Usually unfair
		Unfair
7	Was your performance in assignments discussed with you?	Every time
		Usually
		Occasionally/Sometimes
		Rarely
		Never
8	The faculty illustrates the concepts through examples and applications.	Every time
		Usually
		Occasionally/Sometimes
		Rarely
		Never
9	Your faculty does a necessary follow-up with an assigned task to you.	Every time
		Usually
		Occasionally/Sometimes
		Rarely
		Never
10	The faculty identify your strengths and encourage you with providing right level of challenges.	Fully
		Reasonably
		Partially
		Slightly
		Unable to
11	Faculty is able to identify your weaknesses and help you to overcome them.	Every time
		Usually
		Occasionally/Sometimes
		Rarely
		Never
12	The faculty helps you identify your strengths and weaknesses.	Every time
		Usually

		Occasionally/Sometimes
		Rarely
		Never
13	The faculty use student centric methods, such as experiential learning, participative learning and problem solving methodologies for enhancing learning experiences.	To a great extent
		Moderate
		Some what
		Very little
		Not at all
14	What percentage of faculty use ICT tools such as LCD projector, Multimedia, etc. while teaching.	Above 90%
		70 – 89%
		50 – 69%
		30 – 49%
		Below 29%
15	The overall quality of teaching-learning process was very good.	Strongly agree
		Agree
		Neutral
		Disagree
		Strongly disagree
16	Give three observation / suggestions to improve the overall teaching – learning experience in your institution.	Text

9.3 Feedback on facilities (5)

Total Marks 5.00

Institute Marks : 5.00

Feedback on facilities

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

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

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

Feedback of Final Year Students (2016-2017 Batch) - Residents - Report							
Total Responses: 1113							
Measure of positivity = positive responses/negative responses = (Very Good + Good) / (Very Poor + Poor)							
Sno.	**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

The action taken by the Institution after the feedback of 2016-17 is given below:-

1. Wi- Fi extended to all Hostels 24x7
2. CCTV cameras installed throughout the campus including hostels for safety and security
3. Dish Washers were installed in all Hostels, a total of four dish washers
4. The Existing Gate Pass management system upgraded to Campus Management System with more student friendly add ons.
5. The Main canteen was completely renovated to accommodate more students and menu revamped
6. Timings of all canteens were extended till 8 PM.
7. Power laundry introduced
8. New saloon and spa (outsourced to Naturals- a well know brand)introduced in the campus
9. New stage constructed in the Main Playground/Track enhanced with greenery

Table B.9.3(b) Feedback of Final Year Students (2017-2018 Batch) - Residents - Report							
Sno	Parameters	V.Good	Good	Avg	Poor	V Poor	Positivity
1	Amenity Stores	111	229	210	67	72	2
2	Attention to Problems	95	182	216	86	110	1
3	Behavior of Hostel Staff	138	246	182	55	68	3
4	Bus & Transport	103	239	219	63	65	3
5	Campus maintenance	310	253	94	9	23	18
6	Campus security	203	249	123	42	72	4
7	Campus wifi	91	162	218	125	93	1
8	Canteen facilities	81	172	198	106	132	1
9	Clinic & Pharmacy	109	224	209	83	64	2
10	Computerized Gate pass Management System	115	242	172	55	105	2
11	Cultural Events and Activities	121	242	186	64	76	3
12	Dining Hall Facilities	103	224	208	68	86	2
13	Dining Hall Hygiene	139	265	175	58	52	4
14	Drinking Water	144	299	176	35	35	6
15	Facilities for parents/ guests	105	236	204	73	71	2
16	Food Handling and Serving	98	227	213	70	81	2

17	Hostel Room/Corridor Hygiene and upkeep	181	290	150	32	36	7
18	Hostel surroundings (Garden, Landscaping)	221	273	136	22	37	8
19	Laundry Facility including laundromate	114	240	218	50	67	3
20	Naturals and saloon	134	288	194	35	38	6
21	Power supply and backup	249	280	111	17	32	11
22	Quality of Food	87	119	180	124	179	1
23	Reading Room Facilities (News Papers, Magazines etc.)	119	251	201	59	59	3
24	Recreational Facilities	101	220	227	72	69	2
25	Role of hostel committees	81	150	202	115	141	1
26	Role of mess committee	76	130	173	140	170	1
27	Role of the CFW(Chief Faculty Warden)	101	196	221	66	105	2
28	Room Furniture Adequacy	112	277	209	31	60	4
29	Sports Facilities (Gym, Outdoor, Indoor etc.)	119	289	184	42	55	4
30	Students welfare and support	97	206	227	59	100	2
31	Toilet hygiene and sanitation	147	267	174	51	50	4
32	Waste Management System	169	310	149	25	36	8

The action taken by the Institution after the feedback of 2017-18 is given below:-

1. Dosa points were introduced in Night canteens functioning near Hostels
2. E- wallet system introduced in Night canteens for cashless transactions
3. Rain water harvesting systems enhanced
4. Waste management system revamped with recycling of plastic waste
5. Five new buses were added to the fleet of buses for commuting day scholars from city.
6. Power Laundry facility enhanced with delivery in 24 hours
7. Dining hall capacities enhanced.
8. A complete set of percussion instruments along with audio /video gadgets added to the Ragasudhaand Media club of the Institute
9. Ramps were added to all academic blocks and hostels to enable smooth movement of physically challenged.
10. Unisex toilets built for physically challenged in Academic Blocks and Hostels.
11. Toilet Facility in the Convention Centre enhanced.
12. New E Learning Halls added into Academic Block 1 and 2
13. 6 new Flip Class rooms /Smart Class rooms added.
14. New Gymnasium established near the Main Play Ground
15. Grass cutting machine added for maintaining the Green track in the Main Ground
16. Cricket pitches added

17. Hot water facility using Solar power enhanced in all Hostels

9.4 Self-Learning (5)

Total Marks 5.00

Institute Marks : 5.00

Self-Learning

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

Facilities to support Self learning

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

Academic Processes promoting Self Learning

- Certain topics of the syllabus (approximately 5%) of selected subjects are left for self study by the students and evaluated in the End semester examinations. This is seen to motivate students towards self-learning.
- The questions for the examinations ought not to have been discussed in the class. This encouraged students to explore reference books.
- The curriculum offers mini project in selected courses during the 2^{nd}/ 3^{rd} 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)

Total Marks 10.00

Institute Marks : 10.00

Career Guidance, Training, Placement

Corporate and Industry Relations

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

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 organized 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 CIRand 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 94 with the breakup of 46 in Coimbatore, 23 in Amritapuri, 13 in Bangalore, 11 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 below, please find the number of students undergone career counselling in the last four academic years.

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

Academic Year	Description of counselling Activities	Number of students benefited	Remarks
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
2018-19	Career Planning Guide and counselling	1224	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, organises 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 theacademic 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 isgrouped 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 enable them to take up the verbal tests conducted by the recruiters with a lot of confidence.

Aptitude Skill

Aptitude is the ability to learn or to develop proficiency in an area, if provided with appropriate education or training. Aptitude is a component of a competency (https://en.wikipedia.org/wiki/Skill) to do a certain kind of work (https://en.wikipedia.org/wiki/Labour_%2528economics%2529) at a certain level. A test is a systematic procedure for comparing peoples 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 skillcoursesare 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 below, please find the number of 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 3rd, 4th, 5th and 6th semesters
		SSK112	1011	
		SSK113	983	
2015 - 16	Life Skills	SSK111	981	B Tech 3rd, 4th, 5th and 6th semesters
		SSK112	1140	
		SSK113	1141	
2016 - 17	Life Skills	15SSK221	995	B Tech 3rd, 4th, 5th and 6th semesters
		SSK112	988	
		SSK113	982	
2017 - 18	Life Skills	15SSK221	1101	B Tech 3rd, 4th, 5th and 6thsemesters
		15SSK321	992	
		15SSK331	994	
2018-19		15SSK221	1224	B Tech 3rd, 4th, 5th and 6th semesters
		15SSK321	1088	
		15SSK331	1088	

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 below, please find the summary of the 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
2018-19	2	4	1	2	1	4	1	2	17

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 identifiedand 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 below, please find the summary of the certification programs conducted during the last four academic years.

Academic Year	Industry Elective executed	Number of students Completed the course									
		AEE	CHE	CIE	CSE	ECE	EEE	EIE	MEE	PG	TOTAL
2013 - 14	BEC-Registered				11	12	1		6		30
	BEC-Certified				10	11	1		6		30
2014 - 15	BEC-Registered				4		1				5
	BEC-Certified				4		1				5
2015 - 16	BEC-Registered					2			2		4
	BEC-Certified					2			2		4
2016-17	BEC-Registered									17	17
	BEC-Certified									15	15
	CLAD-Registered					25		11		3	39
	CLAD-Certified					19		1			20

Academic Year	Industry Elective executed	Number of students Completed the course									
		AEE	CHE	CIE	CSE	ECE	EEE	EIE	MEE	PG	TOTAL
2017-18	BEC-Registered		3		1	1			1	2	8
	BEC-Certified		3		1	1			1	2	8
	CLAD-Registered					14	6	1		6	27
	CLAD-Certified					6	4	1			11
	Autodesk – Revit Training			49							49
2018-19	BEC-Registered				18	4	4		24		50
	BEC-Certified				18	4	4		23		49
	CLAD-Registered					47	13	15	4	8	87
	CLAD-Certified					19		1		3	23
	CCDSAP-Registered				139	38	2	1		1	181
	CCDSAP-Certified				5	1					6
	CP-Registered				165	9	2	1			177
	CP-Cleared				48		2				50
	CSA-Appeared				2						2
	CSA-Cleared				1						1
	Autodesk – Revit Training			39							39

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 in table below, please find the summary of the technical sessions conducted during the last four academic years for the B. Tech. students.

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

Academic Year	Number of Technical Sessions conducted for sixth semester students							
	AEE	CHE	CIE	CSE	ECE	EEE	EIE	MEE
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
2018-19	11	12	11	13	13	12	13	12

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 below, please find the summary of the 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. PanduRanganChandrasekharan, 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. PanduRanganChandrasekharan, IIT Madras)
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. PanduRanganChandrasekharan, IIT Madras)
2018-19	Sessions on Data Structures and Algorithm for top students	12	150	External (Prof. Venkatesh Raman. Institute of Mathematical Sciences, Chennai)
	Sessions on Data Structures and Algorithm for top students	16	150	External (Prof. Venkatesh Raman. Institute of Mathematical Sciences, Chennai)

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. Studentssubmit a report at the end of internship program and based on overall performance they are given full time employment.

In the table below, please find the number of 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
2018-2019	207

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 University, 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 below, please find the 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
2018-2019	German	80

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 institutewho 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 below, please find the summary of the 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

Academic Year	Competitive Exam training	Number of students attended
2018-19	CAT	51
	GATE	41
	GRE	87
	CAT	29
	GATE	54

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 lists the 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
2018-19	55	43	65	375	195	123	51	190

Pre Placement Training

CIR conducts pre-placement training for all branches of engineeringduring the summer vacation between pre-final year and final year with the focus on life skills and technical skills. The pre-placement training isfull 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 below, please find the summary of the 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

Academic Year	Average Number of session taken during Preplacement training
2017 - 18	47
2018-19	42

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 below, please find the summary of the pre placement training during the last four academic years.

Academic Year	No. of Trainings
2015 - 16	42
2016 - 17	38
2017 - 18	86
2018-19	93

Special Training for Underperforming Students

CIR conducts special sessions for students who are not able to secure a job during the June to Dec period of the recruitment process. The recruitment process generally starts in June and continues till June next year. Such students are identified and given supportive training in their weak areas. Generally, such trainings are in aptitude skill, verbal skill and technical subjects. These trainings are conducted during the winter vacation in between the 7^{th} and 8^{th}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 six academic years it has signed MoUs with industries and the following is a summary list

Academic Year	No. of MOUs Signed / Renewed
2014 - 15	18
2015 - 16	9
2016 - 17	6
2017 - 18	14
2018 - 19	11

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 below, please find the summary of the industry electives during the last four academic years.

Academic Year	Industry Elective executed	Course Code	Department which offered the Electives
2014 - 15	IT Essentials	CSE 380	CSE
	Business Intelligence	CSE 457	CSE
2015 - 16	IT Essentials	CSE 380	CSE
	Big Data Analytics	CSE459	CSE
2016 - 17	IT Essentials	CSE 380	CSE
	Big Data Analytics	CSE459	CSE
2017 - 18	Foundations of IT	15CSE377	CSE
	Big Data Analytics	CSE459	CSE
2018-19	Foundations of IT	15CSE377	CSE
	Big Data Analytics	CSE459	CSE

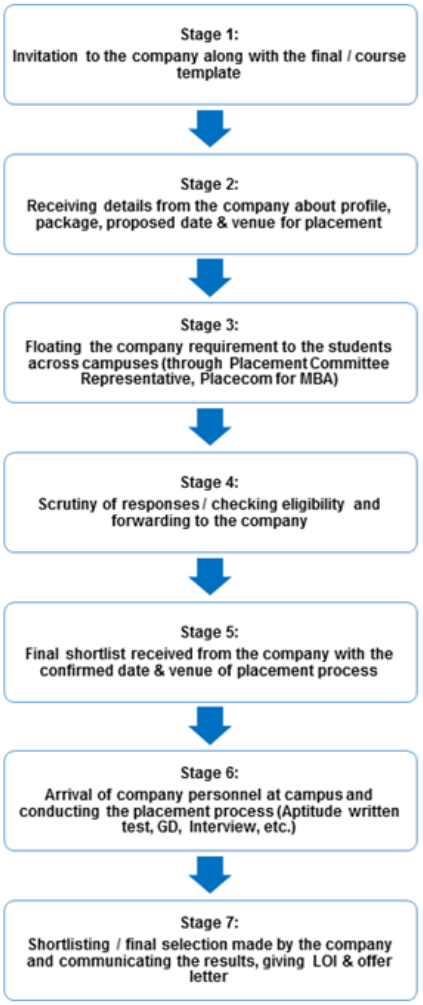
Academic Year	Industry Elective executed	Number of students Completed the course								
		AEE	CHE	CIE	CSE	ECE	EEE	EIE	MEE	TOTAL
2014 - 15	IT Essentials	14	17	4	-	56	67	35	39	232

Academic Year	Industry Elective executed	Number of students Completed the course								
		AEE	CHE	CIE	CSE	ECE	EEE	EIE	MEE	TOTAL
2015-16	Business Intelligence	-	-	-	196	-	-	-	-	196
	IT Essentials	12	25	-	-	44	17	29	96	223
	Big Data Analytics	-	-	-	250	-	-	-	-	250
2016-17	IT Essentials	25	24	16	-	100	51	24	86	326
	Big Data Analytics	-	-	-	107	-	-	-	-	107
2017-18	Foundations of IT	15	16	5	-	60	23	24	41	184
	Big Data Analytics	-	-	-	286	-	-	-	-	286
2018-19	Foundations of IT	12	12	2	-	83	65	37	50	261
	Big Data Analytics	-	-	-		-	-	-	-	

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.



The summary of the placement statistics during the last 3 years is shown below

	2019 Batch			2018 Batch			2017 Batch			
B.Tech	**Regd. Eligible**	**Placed**	**%**	**Regd. Eligible**	**Placed**	**%**	**Regd. Eligible**	**Placed**	**%**	
CSE	**218**	**214**	**98.17**	**223**	**222**	**99.55**	279	276	98.92	
ECE	**119**	**118**	**99.16**	**126**	**123**	**97.62**	159	157	98.74	
EEE	**69**	**66**	**95.65**	**58**	**56**	**96.55**	83	78	93.98	

	2019 Batch			2018 Batch			2017 Batch			
B.Tech	**Regd. Eligible**	**Placed**	**%**	**Regd. Eligible**	**Placed**	**%**	**Regd. Eligible**	**Placed**	**%**	
EIE	**53**	**53**	**100.00**	**41**	**41**	**100.00**	43	40	93.02	
Mech.	**78**	**73**	**93.59**	**82**	**80**	**97.56**	137	136	99.27	
Chem	**21**	**20**	**95.24**	**28**	**19**	**67.86**	38	29	76.32	
AE	**17**	**16**	**94.12**	**23**	**20**	**86.96**	37	32	86.49	
Civil	**21**	**19**	**90.48**	**16**	**9**	**56.25**	37	34	91.89	
Total	**596**	**579**	**97.15**	**597**	**570**	**95.48**	813	782	96.19	
%	**97.15**			**95.48**			96.19			
Average Salary	**5.3**			**4.8**			4.5			
No. of companies visited	**115**			**109**			98			

9.6 Entrepreneurship Cell

Total Marks 5.00

Institute Marks : 5.00

Entrepreneurship Cell

Amrita Centre for Entrepreneurship (ACE) - Expanding the Power of Choice

The Facility at ACE

ACE has its own separate mentoring desk, library, laboratory, and workshop facility. The mentoring in terms of career options and nurturing startup ideas is provided here. As students get a wide range of courses and programmes to choose from while entering the university, likewise they have a set of choices even before graduating successfully from Amrita. According to Prof. C. Parameswaran, Director - CIR, “The Directorate of Corporate & Industry Relations of the University facilitates students with three options – Placements, Higher Studies and Entrepreneurship”. Thus, one of the options for students passing out of Amrita who have the urge to start something is to become an entrepreneur. To nurture the entrepreneurial spirit among youngsters who dare to innovate and initiate, Amrita Centre for Entrepreneurship (ACE) was established by CIR in June, 2011.

The ACE library has its own collection of books and other entrepreneurship-related materials. There is a laboratory for students interested in building circuits. A workshop with facilities like lathe machine, drilling and welding equipment is also available.

Management of ACE:

ACE operates with the support of Director, CIR and his office. Effectively it is a 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 with alumni & associations 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 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 ACEin Enhancing Entrepreneurship

ACE has achieved the following results so far:

- 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 of EDP participants – Names & Ventures

K. VasanthaKokilam, Candlefire Development Academy, 168, DPF Street, Lakshmi Mills, CBE

SubiPrabhakaran, Cake Dew, Puthuvalil House, Chathannoor, Kollam 691572 Kerala

M S Sooraj Subramanian, Earlang Dreams, 97, ChokalingamPillai Street, Nataraja Nagar, Madurai

Hariharan S, NuthukkuMuttai, Sri Krishna College, Palakkad Main Rd. Kuniamuthur, CBE

R. Kumaresu, The Shake Studio, Sri Krishna College, Palakkad Main Rd., Kuniamuthur, CBE

P.Amuthan, Amuthan Trading, 29A,Durai Samy Layout, Peelamedu, CBE

AlagappanManickam, ALST & Co.,RangaKonar St, Anupperpalayam, Ram Nagar, CBE

Anil Subahar, Shape recruiters, No.19, Malaya St., Vasantham Nagar, KovaipudurPirivu, CBE

Mr. PrasannaBalaji, Coral Textiles, 293/1A, Mullai Nagar, Iduvampalayam road, Periyandipalayam, Tirupur
Mr. SushilSivanesh 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, VellakinarPirivu, GN Mills (PO), CBE

Mr. SathishKumar.P, SKV Paper Product, LalithaammalThottam, 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
Dr. Indumathy R., RGPAL GLOBAL, 65, ThaneerthottiVeedi, Mugasimangalam, Alandurai Post, CBE
Mr. Amarnath B., SPETIX ENTERPRISES AND SERVICE PVT LTD, Kadavnthra, Kochi
Mr. Siva Kumar. M, Cyber Star Exports and Imports, VJ Nagar 2nd Street, Kottaipalayam, CBE
Mr. Vignesh M.. Sri Vignesh Enterprises, 3/160,Kaveri Tank Street, Theethipalayam, CBE
Mr. Menon Vishnu Janardhan, Garpenter, Avinashi, CBE
Mr. Satheeshkumar S., Satheesh Industrials, 14/18b-1, P.N. Lay Out, Vedapatti, CBE
Mr. C M Sathyaprakash, Yakshini Eco Garments, 302,D Block,TulipsApartment,Nava India Signal, CBE
Mr. VigneshPrasanna, The Rapidgo Logistics, 1/447 H.5, Near Neelambur Tollgate, Chinniampalayam, CBE
Mr. HarshaMukundSoundararajan, Microskin India Pvt Ltd, KkPudur, CBE

9.7 Co-curricular and Extra-curricular Activities

Total Marks 10.00

Institute Marks : 10.00

Co-curricular and Extra-curricular Activities

Students are engaged in co-curricular and extra-curricular activities and field trips through student chapters and forums, which provide opportunities for students to explore new fields of interest, cultivate leadership skills, and learn teamwork. While the co-curricular activities are held under the aegis of the respective departments, the extra-curricular activities and sports are organized by the Office of Students Welfare and Department of Sports respectively. Every department has its own association through which various department symposia, workshops and other technical and non-technical events are conducted. Students are encouraged to compete in state and national level sports and cultural competitions. Several festivals and events are organized drawing inspiration from our rich Indian culture. A Talent Search Program is organized for the freshmen (Ref. B 9.15a*). An annual cultural festival Amritotsavam is organized to showcase the talents of students (Ref. B 9.15b*). Several music and dance programs are organized by inviting renowned artists through SPIC MACAY. Student representatives are elected for conduct of the cultural and sports activities. All the students of ASE are divided into four Housesin order to promote healthy competitions in Sports and Cultural events. Student Secretaries/ Jt. Secretaries and Captains / Vice Captains (for cultural events and sports respectively) are elected for each House every year through a democratic process (Ref. B 9.15 c* and 9.15d*).

9.7.1College Techfest (ANOKHA)

ANOKHA is the national engineering techfest of Amrita School of Engineering, Coimbatore India. Having successfully completed eight editions, ANOKHA has had an average annual participation of over 10,000 students from top-ranking engineering institutions in India like IITs, BITS, NITs and IIITs participating as well as partner universities in USA and Europe like University of New Mexico, EVRY France and Uppsala University-Sweden. It has a prize-money of Rs. 15 lakhs with 100+ plus highly competitive contests in all disciplines of engineering, sciences, robotics, gaming, business incubation, social media & entrepreneurship, cubing and short-film making. Taking up themes of global importance and societal relevance like Innovation, sustainable development, green trends, Technopolis - smart city and national security, it witnesses 30+ workshops in various cutting-edge areas of various engineering disciplines, robotics, business, sciences &humanities, start-up pitchfest and finance including its own edition of TEDx-like distinguished talk series called “Lumiere”(Ref. B 9.15e*, 9.15f* and 9.15g*).

The workshops have been offered by leading companies such as Amazon, Microsoft, Mathworks, Cisco, Intel, National Instruments and Robert Bosch. Other highlights of the techfest include fascinating exhibitions &Autoshows, Meet the CEO programme, school outreach and product design, development & demonstration. Anokha provides the students an invaluable chance to discover, develop and demonstrate their talent, to excel and provides an innovative podium to stand on and succeed. This student-driven techfest showcases and celebrates the innovation, ingenuity, teamwork and talent of engineering students of AMRITA.Some of the world renowned artists who have been part of the entertainment spectacle include Percussionist, Sivamani; playback singers, Vijay Prakash, Karthik, Benny Dayal, Haricharan, Rahul Nambiar, AlaapRaju, ShaktisreeGopalan, SunithaSarathy, Ranjani-Gayatri and Nikita Gandhi.

Conduct of a techfest of this magnitude and proportions, for the students and by the students, develops organizational and leadership skills; enlarges their vision; exposes them to new technologies and innovation; facilitates and offers a platform for interaction with leading tech companies; and lastly this association among peer groups from across the length and breadth of the country promotes a sense of national integration.

9.7.2 Extra-Curricular Activities – Sports

Amrita School of Engineering encourages the students to be healthy in body and mind. Sports provide an excellent opportunity for students to interact with each other, develop true sportsman spirit and team spirit, as well as to stay healthy. The Students of Amrita School of Engineering are divided into four teams vizAmritamayi, Anandamayi, ChinmayiandJyothirmayi. The Students participate in clean and fair voting to select their Captains and Vice Captains. The Intramural Events are conducted during the Annual Sports Meet. Staff Tournaments are also conducted in certain games / event every year in both sections. Our students regularly participate in South Zone / All India Inter University Competitions and National Level Inter Collegiate Tournaments.

Infrastructure(Ref. B 16a*)**:**

- Outdoor Games:

  1). Basketball (M & W) 2). Ball Badminton (M&W)

  3). Cricket (M) 4). Football (M)

  5). Kabaddi (M) 6). Tennis (M & W)

  7). Volleyball (M & W) 8). Tenni-Koit (W)

  9). Swimming (M & W) 10). Hockey (M)

  11). Handball (M) 12). Throw ball (W)

  13). Athletics (M & W) 14). Frisbee (MW)

- Indoor Games:

  1). Carrom (M&W) 2). Chess (M&W)

  3). Shuttle Badminton (M&W) 4). Table Tennis (M&W)

  5). Weight Lifting (M) 6). Power Lifting (M)

- Gymnasium: There are three gymnasiums in the Campus with the following equipment:
- Cardio Equipment:

1. Up Ride Bicycle (Viva fitness)
2. Elliptical Cross Trainer (Motus&Viva Fitness)
3. Imported Motorized Treadmill (Motus 900)

- Strength Equipment:6 in 1 Multi Gym, 12 in 1 Multi Gym, 8 Station Multi Gym, 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(Ref. 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 with in six hours. It is one of the few international standard swimming pools wherein the State, National and International Swimming Competitions can be conducted.
- **Synthetic Tennis Court:**
- **ArogyaSadanam (New Gym):**Amulti 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 VasishtaBhavanam, and Specialized 3 Concrete & 2 Mud Cricket Pitches.
    - **Aagneya Sports Club:**Sports Club Aagneya plays a vital role in conducting various Sports Events at Intra Campus Level Open Tournaments such as Campus Marathon, Amrita Badminton League, Amrita Basketball League, Amrita Volleyball League, Amrita Table Tennis League, etc. Student Officer Bearers organize the events. It gives a platform to bring out the sporting talent from a larger group.

Students winning laurels in South Zone/ National level sports are awarded grace marks (Ref. B 9.16 c*)

9.7.3 Extra-Curricular Activities –Student Clubs

16 student-managed Clubs are active in the campus (Table B.9.7.3).The dedicated Student Counsellors encourage students in participating in the variousextracurricularactivities.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.9.7.3 Cultural Forums and Social Clubs

S.No	Name of the Club
1	Amrita Talkies
2	Asthra - Science Club
3	Kalakriti- Arts Club
4	N dam
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 Ref.B 9.17 b*
- **Participation in Association of Indian Universities (AIU)** –Ref.B 9.17 c*
- **NSS Activities 2017-2019**: The summary of NSS activities carried out by the students of Amrita is given below: -

Year	Activity
11 Mar 2017	Lake Cleaning Drive- SelvaChinithamaniKulam 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 AswinMaharaj Foundation music therapy for cancer patient
15 Feb 2018	Blood Donation Camp
15 Aug 2018	Cleaning of 3km stretch of road - part of the SwachataPakhwada

12 Jun 2019	AMF Music Therapy for Cancer patients At Government Hospital Coimbatore
21 Jun2019	AMF Music Therapy for Cancer patients At Government Hospital Coimbatore
13 Jun 2019	Teaching session for Government school children At Ettimadai Village
20 Jun 2019	Teaching session for Government school children At Ettimadai Village

27 Jun 2019	Teaching session for Government school children At Ettimadai Village
21 Jun 2019	International Day of Yoga
22 Jul 2019	JalDiwas Celebration (Rally)
2 Aug 2019	SwacchBharath Awareness programme at Ettimadai Village and at Amrita University
08 Aug 2019	Awareness - "Distraction as a choice" jointly condcted by NSS and SPARK
13 Aug 2019	Mass Tree planatation drive at EttimadaI village
15 Aug 2019	Swachh Bharat Abhiyan ,JalShakthiAbhiyan And Tree planatation at ettimadai village
13 Sep 2019	Fit India Movement Programme, Prime Minister Of India Speech
14 Sep 2019	Eye Checkup camp conducted by NSS and LOTUS Eye Hospital Coimbatore
23 Sep 2019	PoshannMaah - Health Awareness Programme
2 Oct 2019	Drug Awareness Programme at Amrita University
2 Nov 2019	Dengue Fewer AwarnessProgramme at Ettimadai Village
26 Nov 2019	The 70 th Constitution day Celebration at Amrita VishwaVidhyapeetham
17 Dec.2019	A Talk on E-Waste management awareness by Dr R Marimuthu, Scientist C-MET
18 Dec 2019	A Talk on Environmental Conservation by Mr K Kalidasan, President, OSAI .
22 Dec 2019	Lake Cleaning Programme at Vellalore lake , Coimbatore

- **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 ofGurupoornima, 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.

10 GOVERNANCE, INSTITUTIONAL SUPPORT AND FINANCIAL RESOURCES (120)

Total Marks 120.00

10.1 Organization, Governance and Transparency (55)

Total Marks 55.00

10.1.1 State the Vision and Mission of the Institute (5)

Institute Marks : 5.00

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 Raking Framework (NIRF) in 2018 and 2019. Amrita Vishwa Vidyapeetham continuously collaborates with top US Universities including Ivy league universities and top European universities for regular student exchange programs, and has emerged as one of the fastest growing institutions of higher education in India. The School of Engineering is equipped with best-in-class infrastructure and highly qualified faculty.

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 (25)

Institute Marks : 25.00

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

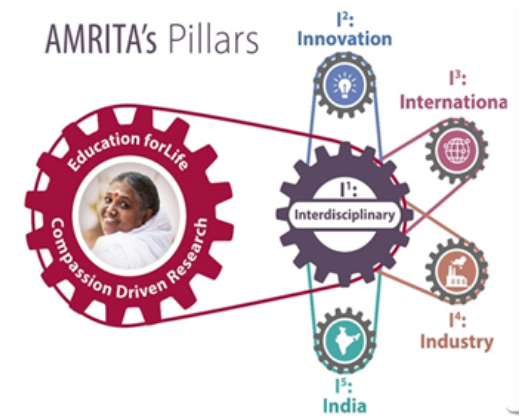


Fig 10.1 Strategic Plan – 5 Is

Building on these strategic pillars is absolutely critical for Amrita to be recognized as a world class university

a. Inter-disciplinary:

Offer degree programs that are inter-disciplinary/intra-disciplinary in nature. The degree programs are designed to fit with the thematic research areas of the school.

Initiate and secure funds for inter-disciplinary projects from Govt agencies and industry

Four new programs that are intra/inter-disciplinary in nature will be introduced from AY 2019-20. Five more programs involving automation & rural technology, cyber physical system security and forensics, data analytics and medical systems, vision based systems for smart transportation and bioinformatics will be introduced between calendar year 2021-2026.

b. Innovation:

Innovative teaching-learning process: Strengthening the curriculum and introducing pedagogical changes that would trigger better knowledge gain. Introduction of modular mathematics courses was implemented in 2015. It is planned to further modularize the mathematics courses during the 2019 curriculum revision.

Introduce flexible curriculum with open electives across all engineering departments. The 2019 curriculum aims at being flexible and learner centric.

Carry out innovative research that can result in patents and entrepreneurship. A 20% increase in patent filing was observed from 2015-19 relative to 2010-15. The goal is to be able to file at least three patents a year from the School of Engineering.

c. International:

Currently, more than 140 MoU's have been signed with foreign universities which allow student exchange programs, dual degree programs, internships and projects. The strategic plan calls for at least an additional 100 MoU's with universities ranked in the top 500 of the world ranking.

Goal is to increase the number of collaborations with reputed foreign universities by 50% in the next 5 years.

d. Industry:

Amrita's engagement with industry is critical to ensure that (a) the curriculum and pedagogy matches with the needs of the industry; (b) to ensure that the research problems chosen are industry relevant problems and (c) industry gets a chance to assess the calibre and quality of Amrita. Goal is to increase the industry consultancy amount by 50% relative to 2018 funding amount.

e. India:

The founding trust of Amrita has adopted 103 villages across India. Experiential learning (named as Live-in-Labs), introduced in 2015, is part of the curriculum. Primary goal is to ensure that the society benefits from all the research work done at Amrita.

Monitoring the execution of the strategic plan is handled by the Board of Management, which is the Apex body of Amrita.

10.1.3 Governing body, administrative setup, functions of various bodies, service rules, procedures, recruitment and promotional policies (10) Institute Marks : 10.00

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

Academic Council

1. List of Members:

- Br. Abhayamrita Chaitanya (Pro Chancellor)
- Dr. P Venkat Rangan (Vice Chancellor)
- Dr. K Sankaran (Registrar)
- Dr. Prem Nair (Director, Health Sciences, Kochi Campus)
- Prof. C Parameswaran (Director -Corporate Relations)
- Dr. Bipin Nair (Dean – School of Biotechnology)
- Dr. Shanti V. Nair (Dean- Research)
- Dr. Sasangan Ramanathan (Dean – Engineering)
- Dr. V S Somanath (Dean, School of Business)
- Dr. Krishnashree Achuthan (Dean,PG Programmes)
- Dr. Maneesha Sudheer (Dean, International Programmes)
- Dr. Balakrishnan Shankar (Associate Dean, Amritapuri)
- Dr. R Dhandapani (Controller of Examinations)
- Br. (Dr.) Sankara Chaitanya (Director, School of Ayurveda)
- Br. Sudeep (School of Engineering, Amritapuri)
- Br. Dhanraj (School of Engineering, Bangalore)

- Dr. U Krishnakumar (School of Arts & Sciences, Kochi)
- Br. Sunil Dharmapal (Mysore Campus)
- Dr. Jyothi S N (Principal – School of Engineering, Amritapuri)
- Prof. S G Rakesh (Asso. Dean – School of Engineering, Bangalore)
- Dr. Vishal Marwaha (Principal, School of Medicine)
- Dr. Balagopal Varma R (Principal - School of Dentistry)
- Prof. K T Moly (Principal - College of Nursing)
- Dr. M Sabita (Principal - School of Pharmacy)
- Dr. Rekha Bhatt (Principal i/c, ASAS Mysore)
- Dr. M Savitha Pande (Principal - School of Education, Mysore)
- Dr. Nandakumaran V M (Principal – School of Arts & Sciences, Amritapuri)
- Dr. Kishore Pillai (Associate Dean – Management),
- Dr. Raghu Raman (Chairperson, ASB)
- Prof. Sunanda Muralidharan (Chairperson, Dept. of Management, Kochi)
- Prof. Manoj P (Chairperson, Dept. of Management, Bangalore)
- Shri. I B Manikantan, Campus Director, Chennai
- Dr. P Shankar, Principal, School of Engineering, Chennai
- Dr. Rajiv Nair, Chairperson (Management, Amritapuri)
- Dr. A V Shyam, Chairperson, School of Business, Coimbatore
- Dr. P Sureshkumar, Principal, School of Agriculture Sciences

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

2. 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

3. 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.
    - Dept Research Promotion Group (RPG)
4. 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.

5. Library Committee

- Dr S.Thirumalini, Chairperson, Dept. of Mech. Engineering - (Chairman)
- Dr K. I. Ramachandran, Professor, CEN (Member)
- Dr B.Rajathilagam, Associate Professor, Dept. of CSE (Member)
- Mr Sabarish Narayanan, Assistant Professor, Dept. of ECE (Member)
- Ms Ambika P, Assistant Professor, Dept. of English (Member)
- Dr R.Jaybarathi, EEE (Guest)
- Mr Jeyothi Prakash, Deputy Librarian (Convener)

Frequency of Meeting: At least twice a year

6. Council of Wardens

- Dr K. Bagavinar – Chairman
- Mr. S Adarsh (Dept of ECE) – Vice Chairman &faculty warden
- Dr. Saravanan (Dept of Mech Engg)
- Mr. P. Gopakumar (Manager, ICTS)
- Mr. C Arunkumar (Dept. of Computer Science & Engg)
- Dr. P. Balasubramanian (Amrita School of Business)
- 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

7. Tech Fest Committee

A total of 20 faculty mentors from various departments

Total of 150 students

Frequency of meeting: As and when needed

8. 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

9. 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

10. 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

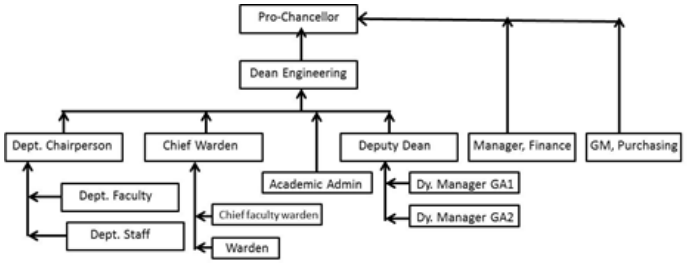


Fig10.2 Organization Structure (key functions shown) of the School of Engineering, Coimbatore

In a recent reorganization, Prof C Parameswaran stands nominated as the Chief Operating Officer (COO) and Col. R. Arun (Retd.) appointed as GM (Services).

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 bachelors and masters 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 (5) Institute Marks : 5.00

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:

- Dr. (Col) 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	Member	Mr. M.Ganesan	Member
Mr . T R 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 (5) Institute Marks : 5.00

- 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.
- All financial approvals/commitments, regardless of the amount are routed through the office of Dean Engineering (campus Head).
- If the requested amount is greater than Rs. 1 Lakh, a detailed discussion is held between the Dean and the chairperson before approval.
- >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 (5)

Institute Marks : 5.00

Yes. The following steps are taken to ensure accurate information dissemination to all the stake holders.

- 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.
- Policy information, list of members of committees, upcoming events, and student grades are available in the campus intranet (link: https://intranet.cb.amrita.edu (https://intranet.cb.amrita.edu))
- Access to library digital content is also available via the campus intranet.

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

Total Marks 15.00

:

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY : (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 - CFY 2018-2019

Total Income 1878509606.0(				Actual expenditure(till…): 996697620			Total No. Of Students 5021
Fee	Govt.	Grants	Other sources(specify) Interest + Van f	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
1851943877	0	0	26565729.00	735467520	261230100	0	198505.80

Table 2 - CFYm1 2017-2018

Total Income 1439202987				Actual expenditure(till…): 1221086281			Total No. Of Students 5013
Fee	Govt.	Grants	Other sources(specify) Interest + Van f	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
1337700296	0	69946699	31555992	992089872	228996409	0	243583.94

Table 3 - CFYm2 2016-2017

Total Income 1169025805				Actual expenditure(till…): 992674085			Total No. Of Students 5124
Fee	Govt.	Grants	Other sources(specify) Interest + van f	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
1144503056	0	0	24522749	813012795	179661290	0	193730.31

Table 4 - CFYm3 2015-2016

Total Income 1052373840				Actual expenditure(till…): 936583197			Total No. Of Students 5014
Fee	Govt.	Grants	Other sources(specify) Interest + Van f	Recurring including salaries	Non Recurring	Special Projects/Anyother, specify	Expenditure per student
1028375112	0	0	23998728	767486113	169097084	0	186793.62

Items	**Budgeted in 2018-2019**	**Actual Expenses in 2018-2019 till**	**Budgeted in 2017-2018**	**Actual Expenses in 2017-2018 till**	**Budgeted in 2016-2017**	**Actual Expenses in 2016-2017 till**	**Budgeted in 2015-2016**	**Actual Expenses in 2015-2016 till**
Infrastructure Built-Up	2400000	2019190	1475000	1474121	1307500	1306876	1174300	1173968

Library	4500000	3653995	5560000	5559522	6830000	6717117	1729000	1723593
Laboratory equipment	2400000	2277106	2600000	2598901	4230000	4225657	3453000	3446433
Laboratory consumables	4200000	3556742	4080000	4078747	4120000	4034704	2520000	2387119
Teaching and non-teaching stat	5800000	3771591	5344050	5344045	5225400	5224273	4944000	4943060
Maintenance and spares	5350000	4394574	4480000	4485107	3556000	3548788	4946000	4938986
R&D	6000000	1706825	8223500	8223867	1330000	1315116	1330000	1324560
Training and Travel	1200000	5730540	1180000	1079783	1201100	1224502	1234000	1228074
Miscellaneous Expenses*	1650000	1370338	1530000	1513232	1372300	1341740	1112800	1074483
Others, specify	2000000	1663346	1640000	1643957	8860000	9149262	8463000	8842841
Total	**1383700000**	**996697620**	**1223420000**	**1221086280**	**993241000**	**992674085**	**937180000**	**936583197**

10.2.1 Adequacy of budget allocation (5)

Institute Marks : 5.00

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. The allocated budget and utilization have been adequate.

10.2.2 Utilization of allocated funds (5)

Institute Marks : 5.00

Individual department chairpersons are notified regarding the sanctioned budget. Expenses for infra-structure, maintenance and house-keeping are maintained at the University/campus level, while the departments are responsible for expenses related to lab equipment, consumables, travel and training expense etc. Library expense is approved and maintained by the Dean/Principal. The sanctioned budget was effectively utilized.

10.2.3 Availability of the audited statements on the institute's website (5)

Institute Marks : 5.00

Yes

10.3 Program Specific Budget Allocation, Utilization (30)

Total Marks 30.00

:

Total Income at Institute level: For CFY,CFYm1,CFYm2 & CFYm3
CFY: (Current Financial Year),
CFYm1 : (Current Financial Year minus 1),
CFYm2 : (Current Financial Year minus 2) and
CFYm3 : (Current Financial Year minus 3)

Table 1 :: CFY 2018-2019

Total Budget 4625500000		Actual expenditure (till…): 165516967		Total No. Of Students 859
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
4,500,000,000	125,500,000	44,951,002	120,565,965	192685.64

Table 2 :: CFYm1 2017-2018

Total Budget 180050000		Actual expenditure (till…): 170645626		Total No. Of Students 858
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
42,050,000	138,000,000	39,848,377	130,797,249	198887.68

Table 3 :: CFYm2 2016-2017

Total Budget 134000000		Actual expenditure (till…): 130138159		Total No. Of Students 831
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
32,000,000	102,000,000	29,776,124	100,362,035	156604.28

Table 4 :: CFYm3 2015-2016

Total Budget 128000000		Actual expenditure (till…): 121744994		Total No. Of Students 766
Non Recurring	Recurring	Non Recurring	Recurring	Expenditure per student
30,000,000	98,000,000	26,699,590	95,045,404	158936.02

Items	Budgeted in 2018-2019	Actual Expenses in 2018-2019 till	Budgeted in 2017-2018	Actual Expenses in 2017-2018 till	Budgeted in 2016-2017	Actual Expenses in 2016-2017 till	Budgeted in 2015-2016	Actual Expenses in 2015-2016 till
Laboratory equipment	3564000	2614498	2070000	2019253	2170000	2117041	5254000	5125934
Software	354000	259376	671000	654497	655000	639018	888000	866250
Laboratory consumable	513000	369447	141000	134871	285000	272263	120000	114721
Maintenance and spares	57000	41053	41000	39067	193000	185038	336000	321993
R & D	1359000	977502	1056000	1010273	886000	848308	470000	450000
Training and Travel	50000	35708	84000	80622	86000	82740	172000	164626

Miscellaneous Expenses*	3258400	2344394	2625200	2512157	2236900	2140607	1668400	1596512
Total	**38481000**	**27741528**	**30315000**	**29060160**	**26644000**	**25550482**	**23924000**	**23008647**

10.3.1 Adequacy of budget allocation (10) Institute Marks : 10.00

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.

10.3.2 Utilization of allocated funds (20) Institute Marks : 20.00

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.

10.4 Library and Internet (20) Total Marks 20.00

10.4.1 Quality of learning resources (hard/soft) (10) Institute Marks : 10.00

10.4.1. Quality of learning resources (hard/soft)

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

Sno	**Database**
1	ACM
2	ASCE
3	ASME

4	Access Engineering
5	ASTM
6	EBSCO: CMMC
7	IEEE Xplore
8	J-Gate (JET)
9	JSTOR
10	Science Direct
11	Scopus
12	Web of Science
13	Springer eJournals
14	Springer eBooks

2. **Accessibility to students**

- Fully Automated Library with LAN and Wi-Fi connection for accessing e-Resources and Internet
- Library is arranging orientation and Hands-on-training to all students.
- Working hours - 8 am to 10 pm
- All e-resources accessible across the campus through WiFi
- Digital Library with Ethernet, UPS connectivity, seating capacity of 170
- WEB OPAC
- Institutional Repository (Soft copy of Ph.D Theses, Dissertation, Project reports, Examination papers)
- New Arrival Bulletin

1. **Support** to **students for** self learning **activities**

- NPTEL
- National Digital Library
- Swayam Prabha,
- e-PG Pathsala, Swayam,
- South Asian Archive
- EDX
- UGC MOOCs
- National Academy Repository
- VIDYA Digital Library
- World eBook Library

10.4.2 Internet (10)

Institute Marks : 10.00

Internet

Name of the Internet bandwith with provider

1 Gbps NKN Link - BSNL

100 Mbps - BSNL

80 Mbps - Blu Ultraband

- Wi Fi availability: WiFi is available at all Academic Areas, Library and Hostels. All students can access the WiFi using their own username and password.
- Internet access in labs, classrooms, library and offices of all Departments: Internet can be accessed from all labs, library, offices, departments etc. Network connectivity is also provided in all classrooms with internet. This connectivity is through LAN cables over and above the WiFi connectivity provided. All the buildings are interlinked through high speed fibre cable with High Bandwidth connectivity.
- Security arrangements : Network security is provided using a perimeter security device and also at all end points. At the perimeter a dual firewalling solution with Basic Firewalling features, Content/Application Filtering, Bandwidth Management, Global VPN, Gateway Antivirus, Botnet Filter, Intrusion Prevention, Anti-Spyware, Geo IP Filtering and Failover Load Balancing take care of all traffic that comes into the campus and going out of the campus. At all end points, desktops are installed

Annexure I
(A) PROGRAM OUTCOME (POs)

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 OUTCOME (PSOs)

Program should specify 2-4 program specific outcomes.

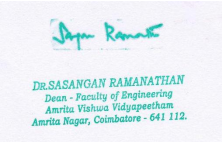
PSO1	Able to design, develop and analyze systems in signal processing, electronics, communication and computing
PSO2	Able to demonstrate competency in research and innovations.

Declaration

The head of the institution needs to make a declaration as per the format given -

- 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 inforce as on date and the institutes hall 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 willbe initiated by the NBA. In case, any false statement/information is observed during pre-visit, visit, postvisit and subsequent to grant of accreditation.

Head of the Institute
Name : Dr. Sasangan Ramanathan
Designation : Dean - Engineering
Signature :



Seal of The Institution :

Place : Coimbatore
Date : 14-01-2020 15:23:03