# SELF ASSESSMENT REPORT (SAR)

# FOR

# NBA ACCREDITATION OF

# UNDER GRADUATE ENGINEERING PROGRAMS

## UG PROGRAM TIER 1
## B.TECH
## (ELECTRONICS AND COMMUNICATION ENGINEERING)

## INSTITUTE OF ENGINEERING & TECHNOLOGY, LUCKNOW
## LUCKNOW 226021

## National Board of Accreditation
## NBCC Place, 4th Floor East Tower, Bhisham Pitamah Marg, Pragati Vihar, New Delhi, India
## September 2019

# PARTA: InstitutionalInformation

**I.Nameand Address of the Institution:** Institute of Engineering & Technology, Sitapur Road, Lucknow-22602, U.P

**II.Nameand Address of the Affiliating University:** Dr.APJ Abdul kalam Technical University, Uttar Pradesh, Sect-11, Jankipuram Extension, Lucknow-226031

**III.Year of establishment of the Institution: 1984**

**IV.Type of the Institution:** Autonomous

| | | |
|---|---|---|
| Institute of National Importance | | ☐ |
| University | | ☐ |
| Deemed University | | ☐ |
| Autonomous | √ | ☐ |
| Any other (Pleasespecify) | | ☐ |

**V.Ownership Status:** State Government

| | | |
|---|---|---|
| Central Government | | ☐ |
| State Government | √ | ☐ |
| Government Aided | | ☐ |
| Self financing | | ☐ |
| Trust | | ☐ |
| Society | | ☐ |
| Section 25 Company | | ☐ |
| Any Other (Please specify) | | ☐ |

**VI. Other Academic Institutions of the Trust/Society/Company etc., if any:**

| Name of the Institution(s) | Year of Establishment | Programs of Study | Location |
|---|---|---|---|
| N/A | | | |

**TableA.6**

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

| S. No. | ProgramName | Name of the Department | Year of Start | Intake | Increase/Decrease in intake, if any | AICTE Approval | Accreditation Status* |
|---|---|---|---|---|---|---|---|
| 1. | B.Tech in Civil Engineering | Civil Engineering | 1985 | 20 | 60 | 1985 | Accredited for three years for the period (2006-2009). |
| 2. | B.Tech in Computer Science & Engineering | Computer Science & Engineering | 1984 | 30 | 60 | 1984 | Accredited for three years for the period (2003-2006) |
| 3. | B. Tech in Electrical Engineering | Electrical Engineering | 1984 | 20 | 60 | 1984 | Accredited twice for three years for the period of (2003-06) and (2008-2011). |
| 4. | B. Tech in Electronics & Communication Engineering | Electronics Engineering | 1984 | 30 | 60 | 1984 | Accredited for three years for the period (2003-2006) |
| 5. | B. Tech in Mechanical Engineering | Mechanical Engineering | 1985 | 20 | 60 | 1985 | Accredited twice for three years for the period of (2003-06) and (2008-2011). |
| 6. | B. Tech in Chemical Engineering | Chemical Engineering | 1996 | 30 | 60 | 1996 | Accredited for three years for the period (2006-2009) |
| 7. | B. Tech in Information Technology | Self Finance | 2000 | 40 | 60 | 2000 | Eligible but not applied. |
| 8. | B. Tech in Electronics & Instrumentation Engineering | Self Finance | 1997 | 30 | 60 | 1997 | Eligible but not applied. |

**VIII. Programs to be considered for Accreditation vide this application**

| S. No. | Program Name |
|---|---|
| **1.** | B. Tech. in Civil Engineering |
| **2.** | B. Tech. in Computer Science & Engineering |
| **3.** | B. Tech. in Electronics & Communication Engineering |
| **4.** | B. Tech. in Electrical Engineering |
| **5.** | B. Tech. in Mechanical Engineering |

**Table A.8**

**IX. Total number of employees**:

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

| Items | | CAY | | CAY*m*1 | | CAY*m*2 | |
|---|---|---|---|---|---|---|---|
| | | **Min** | **Max** | **Min** | **Max** | **Min** | **Max** |
| Faculty in Engineering | **M** | 42 | 42 | 42 | 42 | 30 | 30 |
| | **F** | 06 | 06 | 06 | 07 | 04 | 04 |
| Faculty in Maths, Science& Humanities teaching in engineering Programs | **M** | 10 | 10 | 10 | 10 | 05 | 05 |
| | **F** | 02 | 02 | 02 | 02 | 01 | 01 |
| Non-teaching staff | **M** | 124 | 126 | 126 | 128 | 122 | 122 |
| | **F** | 16 | 16 | 16 | 16 | 16 | 16 |

**Table A.9a**

**CAY– Current Academic Year**
**CAYm1-Current Academic Year minus 1= Current Assessment Year**
**CAYm2- Current Academic Year minus 2=Current Assessment Year minus 1**

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

| Items | | CAY | | CAYm1 | | CAYm2 | |
|---|---|---|---|---|---|---|---|
| | | **Min** | **Max** | **Min** | **Max** | **Min** | **Max** |
| Faculty in Engineering | **M** | 47 | 49 | 49 | 51 | 48 | 49 |
| | **F** | 18 | 19 | 18 | 20 | 17 | 17 |
| Faculty in Maths, Science & Humanities teaching in engineering Programs | **M** | 7 | 8 | 6 | 6 | 07 | 07 |
| | **F** | 2 | 3 | 2 | 2 | 01 | 01 |
| Non-teaching staff | **M** | 24 | 24 | 15 | 16 | 11 | 11 |
| | **F** | 05 | 05 | 03 | 03 | 03 | 03 |

**Table A.9b**

**X.Total number of Students:**

**Engineering Students:**

| Item | CAY | CAYm1 | CAYm2 |
|---|---|---|---|
| Total no.of boys | 1688 | 1661 | 1634 |
| Total no.of girls | 396 | 385 | 348 |
| Total no.of students | 2084 | 2046 | 1982 |

**TableA.10a**

**Non-engineering Students (**MBA and MCA**)**

| Item | CAY | CAYm1 | CAYm2 |
|---|---|---|---|
| Total no.of boys | 192 | 202 | 207 |
| Total no.of girls | 104 | 96 | 88 |
| Total no.of students | 296 | 298 | 295 |

**Table A.10b**

INSTITUTE VISION AND MISSION:

**XI. Vision of the Institute:**

To effectively contribute towards the national endeavor of producing world class manpower and to usher in technology driven economic development of the country in order to enrich the quality of life of its citizen by promoting innovative technologies and optimal utilization of resources for sustainable development.

**XII. Mission of the Institute:**

M1: To establish global state-of-art facilities and resources that will prepare and enrich the human resource by promoting all-inclusive research and developments.

M2: To inculcate entrepreneurship skills in the students in order to optimize resources to achieve the economic growth by improving the quality of life of the citizens.

M3: To instill problem-solving skills for overcoming real life challenges by imparting values based professional education.

**XIII.Contact Information of the Head of the Institution and NBA coordinator:**

i. Name: **Prof. H.K Paliwal**
Designation: **Director**
MobileNo: **941554083**
Email id: **director@ietlucknow.ac.in**

ii. NBAcoordinator:
Name: **Prof. J.B srivastava**
Designation: **Professor (civil Engineering)**
MobileNo: **9450362291**
Email id: **jb.srivastava@ietlucknow.ac.in**

# PARTB: Criteria Summary

**Name of the program UG Engineering (TIER 1) Electronics and Communication Engineering**

| CriteriaNo. | Criteria | Mark/ Weightage |
|---|---|---|
| | **ProgramLevel Criteria** | |
| 1. | Vision, Mission and Program Educational Objectives | 50 |
| 2. | Program Curriculum and Teaching–Learning Processes | 100 |
| 3. | Course Outcomes and Program Outcomes | 17 |
| 4. | Students' Performance | 10 |
| 5. | Faculty Information and Contributions | 200 |
| 6. | Facilities and Technical Support | 80 |
| 7. | Continuous Improvement | 75 |
| | **Institute Level Criteria** | |
| 8. | First Year Academics | 50 |
| 9. | Student Support Systems | 50 |
| 10. | Governance, Institutional Support and Financial Resources | 120 |
| | **Total** | **1000** |

# PART B: PROGRAM LEVEL CRITERIA

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

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

INSTITUTE VISION AND MISSION:

**Vision of the Institute:**

To effectively contribute towards the national endeavor of producing world class manpower and to usher in technology driven economic development of the country in order to enrich the quality of life of its citizen by promoting innovative technologies and optimal utilization of resources for sustainable development.

**Mission of the Institute:**

M1: To establish global state-of-art facilities and resources that will prepare and enrich the human resource by promoting all-inclusive research and developments.

M2: To inculcate entrepreneurship skills in the students in order to optimize resources to achieve the economic growth by improving the quality of life of the citizens.

M3: To instill problem-solving skills for overcoming real life challenges by imparting values based professional education.

**DEPARTMENT VISION AND MISSION**:

**Vision of the Department**:

To produce manpower in the field of Electronics and Communication Engineering, capable to compete with that elsewhere and to make the department a center of excellence in the field of Signal Processing and Microelectronics.

**Mission of the Department**:

M1: To develop the ability among students and understand concepts of core graduate electronics and communication engineering.

M2: To create center of Excellence to meet global research and development challenges.

M3: To build student community with professional and ethical standards in thrust areas so as to meet industry requirements.

## 1.2. State the Program Educational Objectives (PEOs) & Progran Specific Outcomes (PSOs) (5)

Undergraduate education in Electronics and Communication Engineering Department at Institute of Engineering and Technology (I.E.T), Lucknow inculcates the following capabilities

- Use technical, teamwork and communication skills along with leadership principles to pursue Electronics and Communication Engineering careers in areas such as Electronic Circuits, Instrumentation and Controls, Communication Engineering, VLSI Design and Signal Processing.
- To develop the students with computational skills suitable to industrial needs of Indian and multi-national companies.
- To train the students to use modern engineering techniques, skills and tools and to function ethically in their professional Electronics and Communication Engineering roles.
- Engage in life-long learning through independent study and by participating in professional conferences, workshops, seminars or continuing education program.

### Program Educational Objectives (PEOs)

**PEO1**: Graduates of the programme will have an educational experience that inspires them to exhibit leadership and team building skills and have successful careers in their chosen technical or professional domain.

**PEO2**: Graduates of the programme will continue to learn and adapt in a constantly evolving society and contribute to the society in a professional and ethical manner.

**PEO3**: Graduates of the programme will inculcate good technical and professional knowledge according to requirements of industries and higher studies.

**PEO4**: To inculcate the spirit of innovation / creativity, independent thinking, risk taking ability, entrepreneurship and attitude to approach challenges with confidence.

### Progran Specific Outcomes (PSOs)

**PSO1**: **An** ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI, Embedded systems, Communication Systems, Digital & Analog Devices, etc.

**PSO2**: **An** ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions.

**PSO3**: **Wisdom** of social and environmental awareness along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur.

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

Internal Stake Holders

- ❖ Faculty members
- ❖ Non-Teaching Staff
- ❖ Students

External Stake Holders

- ❖ Alumni
- ❖ Industry
- ❖ Employers
- ❖ Parent

❖ **The Vision and Mission Statements are published as follows**

- ➢ Institute website
- ➢ Departmental website

❖ **The Vision and Mission Statements are disseminated as follows**

- Department Main Entrance
- HOD & Faculty Rooms
- ClassRooms
- Laboratories
- Department Library & meeting room
- Notice boards in office and cooridoor.
- Departmental Mazanie.

Apart from this, Mission, Vision is disseminated to all the stakeholders of the programs through faculty meetings, student awareness workshops and student orientation programs.

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

Mission and Vision of the department were defined by involving the stakeholders of the programme, considering the future scope of the department and societal requirement, in line with Institute vision and mission. During the process several inputs are gathered from the stakeholders of the programme. These inputs are analyzed and reviewed as a continuous process for the improvement while ensuring consistency with the vision and mission of the institute.

The process of defining Vision and Mission of the department is outlined below:

The departmental core committee comprising faculty members of the department and senior Professor of other department has been constituted to frame procedures for defining the Vision and Mission of the department.

Roles: The roles of departmental core committee are as follows.

- To frame procedures that help to maintain an academic assessment process of department and implementation thereof.
- To assist academic units of the various courses of the program with assessment pertaining to student learning and development.
- To invite qualified personnel to enrich the deficient areas of teaching learning process for development of efficient teaching methodology.

Mandate:

The recommendations of the committee have to be carried out by the concerned members of the faculty of the departments. The Head of Department has to be informed once in a semester of the status of academic assessment process and its results there of. Along with the above committees, as and when required some adhoc committees are formed for conducting different activities. Procedures of Evaluating Quality of the Program: Committee will evaluate each program running under the department during a semester as followings:

1. Committee will also ask from the faculty members that whether some innovative projects or start-ups can be planned further after completion of the course of the concerned subject, which can benefit the society in direct or indirect way.

2.Committee will also observe the level of students based on the obtained results and other required skills in terms of communications, presentations and innovations of the concerned subjects that how many of them have crossed the threshold T by averaging results of all the class tests.

Main Functions of departmental core committee

- To Review assessment of Course Outcomes prepared by concerned faculty members and their relationship with POs and PSOs.
- Committee collects recommendations and suggestions to come out with implementable actions for continuous improvement in attainment of POs and PEOs.
- To Prepare and finalize the PEOs and PSOs, align them with the mission.

**Following process were adopted in developing Departmental Mission and Vision statements:**

- Departmental core committee and representatives of all stakeholders (Industry, alumni, faculty and students) BOS is formed. The committee receives inputs from stakeholders.
- Vision and mission of the department is finalized and is sent to the BOS and Governing Body for approval.
- Vision and mission are reviewed after every year as per need.
- A detailed survey on various Institute websites was done to excel our vision and mission.
- All the information was collectively summarized, and the faculty listed the most critical areas to be addressed by the department by next five years based on our expertise and available resources.
- Armed with the information thus collected, the departmental faculty will meet number of times to develop and cultivate a strong vision and mission.

The mission was also finalized based on the following components.

- Quality education
- Professional career
- Higher education
- Innovation and Creativity
- Lifelong learning

**Following process were adopted in developing the PEOs and PSOof the program.**

- A series of discussions are conducted amongst departmental faculty, alumni representatives, Industry experts, Academic experts and Board of Studies (BOS) members to finalize the PEOs PSOs.

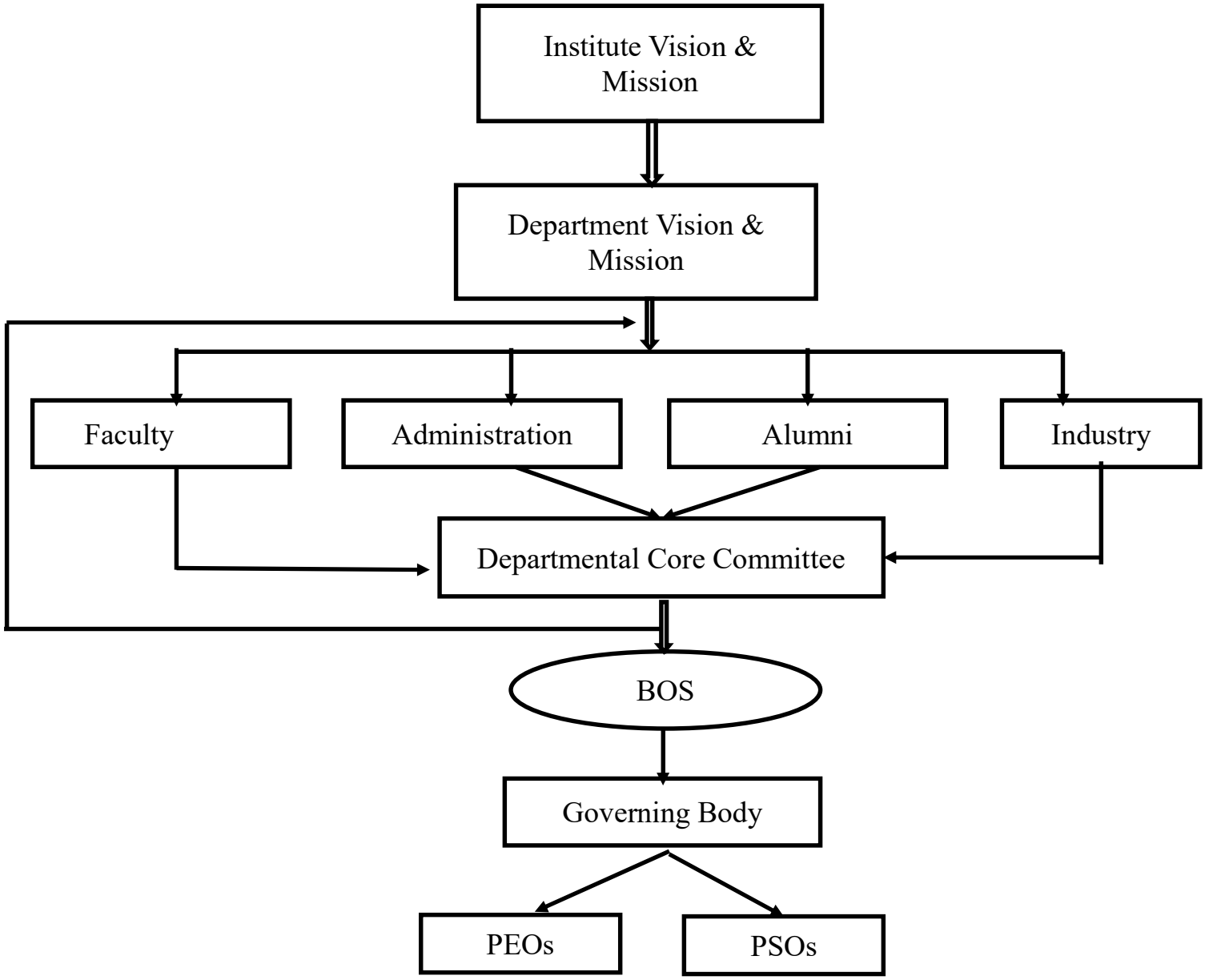



Figure1.4-1: Process for Establishment of Vision, Mission, PEOs & PSOs of the Deoartment

## 1.5. Establish consistency of PEOs with Mission of the Department (10)

Vision and Mission of the **Institute** are taken as a basis to define the Vision and Mission of the **Department** through the consultation process with faculties, students, alumni, Programme Educational Objective (PEOs) are established by keeping Vision and Mission of the Department and the Institute.

| PEO | Statement | M1 | M2 | M3 | Justification |
|---|---|---|---|---|---|
| **PEO1** | Graduates of the programme will have an educational experience that inspires them to exhibit leadership and team building skills and have successful careers in their chosen technical or professional domain. | **3** | **2** | **1** | (Mission 1) strongly support to achieve PEO1 as objective t o develop the ability among students and understand concepts of core graduate electronics which can be accomplished, if graduates are facilitates understanding of new technology.<br>(Mission 2) moderately support PEO1 to embed a strong foundation in Engineering to meet global research challenges.<br>(Mission 3) slightly support in achieving PEO1 as professional domain. Overall, a department mission reasonably supports PEO1. |
| **PEO2** | Graduates of the programme will continue to learn and adapt in a constantly evolving society and contribute to the society in a professional and ethical manner. | **3** | **3** | **2** | Quality Academic programs (Mission 1) highly supports for overall development of graduates and to strengthen their technical skills & interest.<br>With high ethical standards to undertake R&D (Mission 2) strongly helps in fulfilling needs of society.<br>To contribute in a Profesional manner (Mission 3) moderate Industrial growth. |
| **PEO3** | Graduates of the programme will inculcate good technical and professional knowledge according to requirements of industries and higher studies. | **2** | **2** | **3** | Mission 1 and 2 moderately support to achieve PEO3 with respect to effective communication skills and leadership qualities.<br>Mission 3 highly support to achieve PEO3 for establishing the incubation centers to meet industry standard. |
| **PEO4** | To inculcate the spirit of innovation / creativity, independent thinking, risk taking ability, entrepreneurship and attitude to approach challenges with confidence. | **2** | **2** | **3** | Mission 3 highly supports to achieve PEO4 for establishing the incubation centers to creat entrepreneurship and attitude to approach challenges with confidence.<br>Mission 1 and 2 moderately support to achieve PEO4 with respect to effective communication skills, and leadership qualities. |

Table1.5

**Note:** M1,M2,……,Mn are distinct elements of Mission statement. Enter correlation levels1, 2 or 3 as defined as:
1: Slight(Low) 2: Moderate(Medium) 3: Substantial(High) *Ifthere is no correlation, put "-"*

| CRITERION 2 | Program Curriculum and Teaching –Learning Processes | 100 |
|---|---|---|

## 2.1. Program Curriculum (30)

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

The curriculum in Electronics and Communication Engineering lays great emphasis on deep understanding of fundamental principles and state-of-the-art knowledge of electronics. The curriculum is updated and changes are incorporated on the recommendations of the teaching facultyfor submission to Board of Studies (BOS). Several new elective courses are being introduced in B.Tech Programmes curriculum based on the current technology evolution. Program curriculum updation based on gap analysis flow chart as given below

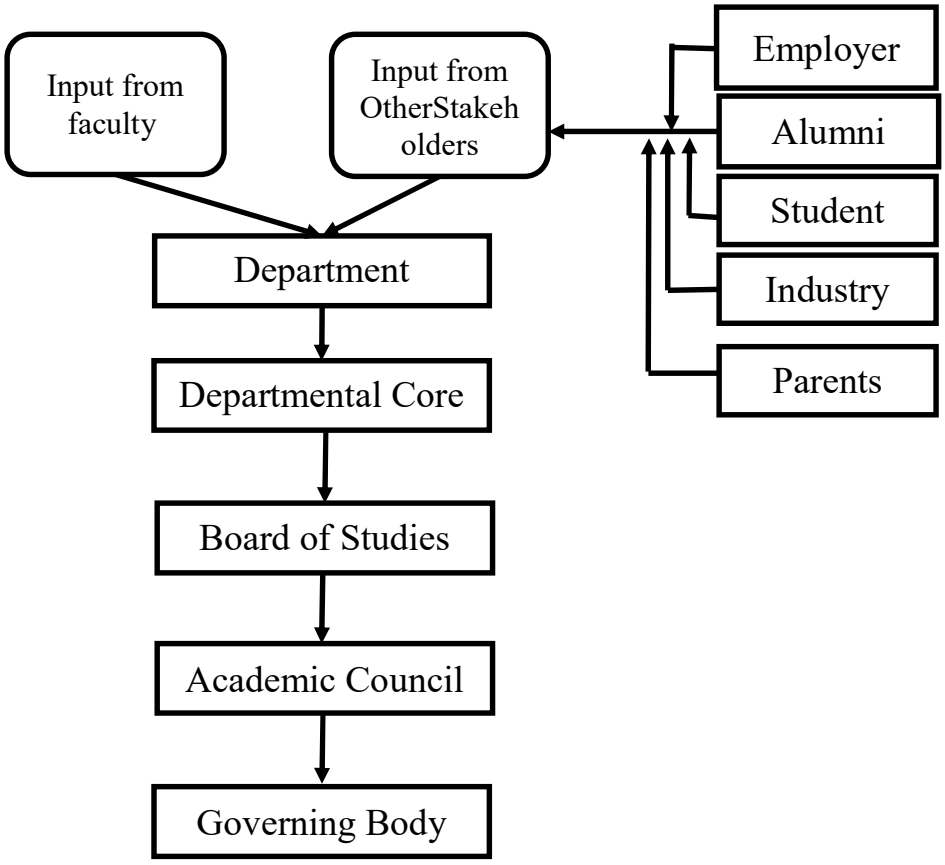



Figure 2.1.1a

The procedure involves the meeting of the BOS where the proposed structure is discussed in the light of Programme Educational Objectives (PEO). The BOS comprises faculty members of the Department, one of the alumni, **one of the industry expert** and senior Professor from IITs/NITs as members. On finalization by BOS, it is sent to Academic Council and thereafter to Governing Body for approval.

## Program Curriculum and Teaching –Learning Processes

### 2.1.2. Structure of the Curriculum (5)

**Academic session 2009-2015 Old Syllabus (EC & EEC Code Series)**

**Academic session 2016-2018 CBCS (Choice Based Credit System)**

**Academic session 2018-till date CBCS with AICTE Model Curriculum Course structure**

**Effective from Session 2018-19]**
**(CHOICE BASED CREDIT SYSTEM &AICTE MODEL BASED CURRICULUM**
**B.TECH. FIRST YEAR**

**B. TECH. FIRST SEMESTER (I)**

| Sl No. | Subject Code | SubjectName | L-T-P | Th/LabMarks | | Sessional | | | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TE | PE | Test | Assig/Att. | Total | PS | | |
| 1 | KAS103 | EngineeringMaths-I | 3---1---0 | 100 | - | 30 | 20 | 50 | 25 | 150 | 4 |
| 2 | KAS101/102 | Physics/Chemistry | 3---1---3 | 100 | 25 | 30 | 20 | 50 | 25 | 200 | 5.5 |
| 3 | KEE101/ KCS101 | Basic ElectricalEngg/ Programming for ProblemSolving | 3---1---2 | 100 | 25 | 30 | 20 | 50 | 25 | 200 | 5 |
| 4 | KCE101/K WS101 | Engineering Graphics & Design/Workshop Practices | 1---0---4 | - | 25 | - | - | - | 25 | 50 | 3 |
| | **TOTAL** | | | | | | | | | **600** | **17.5** |

**B. TECH. SECOND SEMESTER (II)**

| Sl No. | Subject Code | SubjectName | L-T-P | Th/LabMarks | | Sessional | | | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | TE | PE | Test | Assig/Att | Total | PS | | |
| 1 | KAS203 | Engineering Maths-II | 3---1---0 | 100 | - | 30 | 20 | 50 | 25 | 150 | 4 |
| 2 | KAS201/202 | Physics/Chemistry | 3---1---3 | 100 | 25 | 30 | 20 | 50 | 25 | 200 | 5.5 |
| 3 | KEE201/ KCS201 | Basic Electrical Engg/ Programming for Problem Solving | 3---1---2 | 100 | 25 | 30 | 20 | 50 | 25 | 200 | 5 |
| 4 | KCE201/K WS201 | Engineering Graphics & Design/Workshop Practices | 1---0---4 | - | 25 | - | - | - | 25 | 50 | 3 |
| 5 | KAS 204 | Professional English | 2---0---2 | 100 | - | 30 | 20 | 50 | - | 150 | 3 |
| | **TOTAL** | | | | | | | | | **750** | **20.5** |

## [Effective from Session 2018-19]
## (CHOICE BASED CREDIT SYSTEM &AICTE MODEL BASED CURRICULUM)
## B.TECH. SECOND YEAR
### B. TECH. THIRD SEMESTER (III)

| Sr. No. | Course Code | Course Title | Periods | | | Evaluation Scheme | | | | End Semester | | Total | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | CT | TA | Total | PS | TE | PE | | |
| | KOE031-38/ KAS302 | Engg. Science Course /Maths IV | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 1. | KAS301/ KVE301 | Technical Communication /Universal Human values | 2<br>3 | 1<br>0 | 0<br>0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 2. | KEC301 | Electronic Devices | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 3. | KEC302 | Digital System Design | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 4. | KEC303 | Network Analysis and Synthesis | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 6. | KEC351 | Electronics Devices Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 7. | KEC352 | Digital System Design Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 8. | KEC353 | Network Analysis and Synthesis lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 9. | KEC354 | Mini Project or Internship Assessment | 0 | 0 | 2 | | | 50 | | | | 50 | 1 |
| 10. | KNC301 /KNC302 | Computer System Security /Python Programming | 2 | 0 | 0 | 15 | 10 | 25 | | 50 | | | 0 |
| 11. | | MOOCs (Essential for Hons. Degree) | | | | | | | | | | | |
| | | **TOTAL** | | | | | | | | | | **950** | **22** |
| *The Mini Project or internship (3-4 weeks) conducted during summer break after II semester and will be assessed during III semester. | | | | | | | | | | | | | |

### B. TECH. FOURTH SEMESTER (IV)

| Sr. No. | Course Code | Course Title | Periods | | | Evaluation Scheme | | | | End Semester | | Total | Credits |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | L | T | P | CT | TA | Total | PS | TE | PE | | |
| 1. | KAS402/ KOE041-48 | Maths-IV / Engg. Science Course | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 2. | KVE401/ KAS401 | Universal Human Values/ Technical Communication | 3<br>2 | 0<br>1 | 0<br>0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 3. | KEC401 | Communication Engineering | 3 | 0 | 0 | 30 | 20 | 50 | | 100 | | 150 | 3 |
| 4. | KEC402 | Analog Circuits | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 5. | KEC403 | Signal System | 3 | 1 | 0 | 30 | 20 | 50 | | 100 | | 150 | 4 |
| 6. | KEC451 | Communication Engineering Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 7. | KEC452 | Analog Circuits Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 8. | KEC453 | Signal System Lab | 0 | 0 | 2 | | | | 25 | | 25 | 50 | 1 |
| 9. | KNC402/ KNC401 | Python Programming/ Computer System Security | 2 | 0 | 0 | 15 | 10 | 25 | | 50 | | | 0 |
| 10. | | MOOCs (Essential for Hons. Degree) | | | | | | | | | | | |
| | | **TOTAL** | | | | | | | | | | **900** | **21** |

## [Effective from Session 2016-17]
### (CHOICE BASED CREDIT SYSTEM)
## B.TECH. FIRST YEAR
### B. TECH. FIRST SEMESTER (I)

| Sl No. | Subject Code | SubjectName | L-T-P | Th/Lab Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|
| | | | | | Test | Assig/Att. | | |
| 1 | RAS103 | Engineering Maths-I | 3---1---0 | 70 | 20 | 10 | 100 | 4 |
| 2 | RAS101 | Engineering Physics-I | 3---1---0 | 70 | 20 | 10 | 100 | 4 |
| 3 | REE101/ RME101 | Basic Electrical Engg/ Elements of Mechanical Engg | 3---1---0 | 70 | 20 | 10 | 100 | 4 |
| 4 | RAS 104/ RCS101 | Professional Communication /Computer System & Programmingin | 3---0---0 | 70 | 20 | 10 | 100 | 3 |
| 5 | REC101/ RAS102 | Basic Electronics/ Engineering Chemistry | 3---1---0 | 70 | 20 | 10 | 100 | 4 |
| 6 | RAS151/ RAS152 | Engg. PhysicsLab/ Engg. ChemistryLab | 0---0---2 | 50 | | 50 | 100 | 1 |
| 7 | REE151/ RME151 | Basic Electrical Engg Lab/ Elements of Mechanical Engg Lab | 0---0---2 | 50 | | 50 | 100 | 1 |
| 8 | RAS 154/ RCS151 | Professional Communication Lab/ Computer Programming. Lab | 0---0---2 | 50 | | 50 | 100 | 1 |
| 9 | RME152/ RCE151 | Workshop Practice/ Computer Aided Engg. Graphics | 0---0---3 | 50 | | 50 | 100 | 2 |
| | **TOTAL** | | | | | | **900** | **24** |

### B. TECH.SECONDSEMESTER (II)

| Sl No. | Subject Code | SubjectName | L | T | P | Th/Lab Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Test | Assig/Att. | | |
| 1 | RAS203 | Engineering Maths-II | 3 | 1 | 0 | 70 | 20 | 10 | 100 | 4 |
| 2 | RAS201 | Engineering Physics-II | 3 | 1 | 0 | 70 | 20 | 10 | 100 | 4 |
| 3 | RME201/ REE201 | Elements of Mechanical Engg/ Basic Electrical Engg | 3 | 1 | 0 | 70 | 20 | 10 | 100 | 4 |
| 4 | RCS201 / RAS 204 | Computer System & Programmingin C/ Professional Communication | 3 | 0 | 0 | 70 | 20 | 10 | 100 | 3 |
| 5 | RAS202/ REC201 | Engineering Chemistry/ Basic Electronics | 3 | 1 | 0 | 70 | 20 | 10 | 100 | 4 |
| 6 | RAS252/ RAS251 | Engg. Chemistry Lab/ Engg. PhysicsLab | 0 | 0 | 2 | 50 | | 50 | 100 | 1 |
| 7 | RME251 /REE251 | Elements of Mechanical Engg Lab/ Basic Electrical Engg Lab | 0 | 0 | 2 | 50 | | 50 | 100 | 1 |
| 8 | RCS251 / RAS 254 | Computer Programming. Lab/ Professional Communication Lab | 0 | 0 | 2 | 50 | | 50 | 100 | 1 |
| 9 | RCE251/ RME252 | Computer Aided Engg. Graphics/ Workshop Practice | 0 | 0 | 3 | 50 | | 50 | 100 | 2 |
| | **TOTAL** | | | | | | | | **900** | **24** |

## Program Curriculum and Teaching –Learning Processes

### [Effective from Session 2016-17]
### (CHOICE BASED CREDIT SYSTEM)
### B.TECH. SECOND YEAR
### B. TECH. THIRD SEMESTER (III)

| S. No. | Subject Code | Subject Name | L-T-P | ESE Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|
| | | | | | CT | TA | | |
| 1. | ROE030 to 039/ RAS301 | Science Based Open Elective/ Mathematics-III | 3-1-0 | 70 | 20 | 10 | 100 | 4 |
| 2. | RVE301/ RAS302 | Universal Human Values & Professional Ethics/ Environment & Ecology | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 3. | REE305 | Network Analysis and Synthesis | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 4. | REC301 | Digital Logic Design | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 5. | REC302 | Electronic Devices and Circuits | 3-1-0 | 70 | 20 | 10 | 100 | 4 |
| 6. | REC303 | Signals & Systems | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 7. | REC351 | Digital Logic Design Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 8. | REC352 | Electronic Devices and Circuits Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 9. | REC353 | Signals & Systems Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 10. | REC354 | Electronics Workshop & PCB Design Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 11. | RME151* | Elements of Mechanical Engineering* | 3-1-0 | 70 | 20 | 10 | 100* | -- |
| 12. | RCE151* | Computer Aided Engineering Graphics* | 0-0-3 | 50 | 30 | 20 | 100* | -- |
| Total | | | | | | | 1000 | 24 |

CT: Class Test **TA**: Teacher Assessment **L/T/P**:Lecture/ Tutorial/Practical

*Students admitted in B.Tech. 2nd Year through lateral entry on the basis of B.Sc. qualification have to qualify these subjects as AUDIT COURSES.

**Science Based Open Electives:**

ROE030/ROE040 Manufacturing Process
ROE031/ROE041Introduction to soft computing
ROE032/ROE042 Nano Science
**ROE033/ROE043Laser System and application**
ROE034/ROE044 Space Science
ROE035/ROE045 Polymer Science & Technology
ROE036/ROE046 Nuclear Science
ROE037/ROE047 Material Science
**ROE038/ROE048 Discrete Mathematics**
ROE039/ROE049 Applied Linear Algebra

## Program Curriculum and Teaching –Learning Processes

### B. TECH.FOURTH SEMESTER (IV)

| S. No. | Subject Code | Subject Name | L-T-P | ESE Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|
| | | | | | CT | TA | | |
| 1. | RAS401/ ROE040 to 049 | Mathematics-III/ Science Based Open Elective | 3-1-0 | 70 | 20 | 10 | 100 | 4 |
| 2. | RAS402/ RVE401 | Environment & Ecology/ Universal Human Values & Professional Ethics | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 3. | REC401 | Microprocessors & Microcontrollers | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 4. | REC402 | Electromagnetic Field Theory | 3-1-0 | 70 | 20 | 10 | 100 | 4 |
| 5. | REC403 | Electronic Measurement & Instrumentation | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 6. | RCS406 | Data Structure & Algorithms | 3-0-0 | 70 | 20 | 10 | 100 | 3 |
| 7. | REC451 | Microprocessors & Microcontrollers Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 8. | REC452 | Advanced Electronics System Instrumentation Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 9. | REC453 | Electronics Instrumentation & Measurement Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 10. | RCS456 | Data Structure & Algorithms Lab | 0-0-2 | 50 | 30 | 20 | 100 | 1 |
| 11. | RME251* | Elements of Mechanical Engineering* | 3-1-0 | 70 | 20 | 10 | 100* | -- |
| 12. | RCE251* | Computer Aided Engineering Graphics* | 0-0-3 | 50 | 30 | 20 | 100* | -- |
| Total | | | | | | | 1000 | 24 |

## Program Curriculum and Teaching –Learning Processes

### [Effective from Session 2018-19]
**(CHOICE BASED CREDIT SYSTEM)**
### B.TECH. THIRD YEAR
**B. TECH. FIFTH SEMESTER (IV)**

| Sr. No. | Sub Code | Subject Name | L-T-P | Th/Lab Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|
| | | | | ESE | CT | TA | | |
| 1 | | Managerial Economics | 3--0--0 | 70 | 20 | 10 | 100 | 3 |
| 2 | | Sociology/Cyber Security | 2--0--0 | 70 | 20 | 10 | 100 | 2 |
| 3 | REC-501 | Integrated Circuits | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 4 | REC-502 | Principles of Communication | 3--0--0 | 70 | 20 | 10 | 100 | 3 |
| 5 | REC-503 | Digital Signal Processing | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 6 | REC-01_ | Deptt. Elective Course1 | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 7 | REC-551 | Integrated Circuits Lab | 0--0--2 | 50 | | 50 | 100 | 1 |
| 8 | REC-552 | Communication Lab–I | 0--0--2 | 50 | | 50 | 100 | 1 |
| 9 | REC-553 | Digital Signal Processing Lab | 0--0--2 | 50 | | 50 | 100 | 1 |
| 10 | REC-554 | CAD of Electronics Lab-I | 0--0--2 | 50 | | 50 | 100 | 1 |
| | TOTAL | | 17-3-8 | 620 | 120 | 260 | 1000 | 24 |

### Departmental Elective Course-1

| | | |
|---|---|---|
| 1. | REC-011 | Antenna & wave propagation (Through NPTEL) |
| 2. | REC/RIC-012 | Computer Architecture and Organization (NPTL) |
| 3. | REC-013 | Real Time Systems (Through NPTEL) |
| 4. | REC/RIC-014 | Artificial Neural Networks (Through NPTEL) |
| 5. | REC-015 | Advance Semiconductor devices (Through NPTEL) |

## Program Curriculum and Teaching –Learning Processes
## B.TECH. THIRD YEAR
### B. TECH. SIXTH SEMESTER (VI)

| Sr. No | Sub Code | Subject Name | L-T-P | Th/LAB Marks | Sessional | | Total | Credit |
|---|---|---|---|---|---|---|---|---|
| | | | | ESE | CT | TA | | |
| 1 | RAS601 | Industrial Management | 3--0--0 | 70 | 20 | 10 | 100 | 3 |
| 2 | RUC 601 | Cyber Security/Sociology | 2--0--0 | 70 | 20 | 10 | 100 | 2 |
| 3 | RIC-603 | Control System I | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 4 | REC601 | Microwave Engineering | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 5 | REC-602 | Digital Communication | 3--0--0 | 70 | 20 | 10 | 100 | 3 |
| 6 | REC-02_ | Deptt. Elective Course2 | 3--1--0 | 70 | 20 | 10 | 100 | 4 |
| 7 | REC-651 | Microwave Engg Lab | 0--0--2 | 50 | | 50 | 100 | 1 |
| 8 | REC-652 | Communication Lab-II | 0--0--2 | 50 | | 50 | 100 | 1 |
| 9 | RIC-653 | Control System Lab-I | 0--0--2 | 50 | | 50 | 100 | 1 |
| 10 | RIC-651 | Microcontrollers For Embedded Systems Lab | 0--0--2 | 50 | | 50 | 100 | 1 |
| | TOTAL | | 17-3-6 | 620 | 120 | 260 | 1000 | 24 |

**Departmental Elective Course-2**

| | | |
|---|---|---|
| 1. | REC/RIC-021 | Industrial Electronics |
| 2. | REC-022/RIC-601 | Microcontroller for Embedded System (ThroughNPTEL) |
| 3. | REC/RIC-023 | AnalogSignal Processing (Through NPTEL) |
| 4. | REC-024 | Advance Digital Design Using Verilog |
| 5. | REC-025 | Introduction to RADAR Systems |

## [Effective from Session 2019-20]
### (CHOICE BASED CREDIT SYSTEM)
## B.TECH. FOURTH YEAR
### B. TECH. SEVENTH SEMESTER (VII)

| No. | Subject Code | Name of the Subject | Periods | | | Evaluation Scheme | | | | Subject Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sessional Assessment | | | ESE | | |
| | | | L | T | P | CT | TA | Total | | | |
| THEORY SUBJECTS | | | | | | | | | | | |
| 1 | ROE07** | Open Elective-I | 3 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| 2 | REC 07* | Departmental Elective-III | 3 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| 3 | REC 07* | Departmental Elective-IV | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 4 | REC701 | Data Communication Network | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 5 | REC702 | VLSI Design | 3 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| PRACTICAL/ DESIGN/ DRAWING | | | | | | | | | | | |
| 7 | REC751 | Optical Communication Lab | 0 | 0 | 2 | - | 50 | 50 | 50 | 100 | 1 |
| 8 | REC752 | Electronic Circuit Design Lab | 0 | 0 | 2 | - | 50 | 50 | 50 | 100 | 1 |
| 9 | REC753 | Industrial Training Viva Voce | 0 | 0 | 3 | - | 100 | 100 | - | 100 | 2 |
| 10 | REC754 | Project-I | 0 | 0 | 6 | - | 200 | 200 | - | 200 | 3 |
| | | TOTAL | 14 | 5 | 9 | 100 | 450 | 550 | 450 | 1000 | 24 |

Open Elective-I

1. REC 071 Modelling and Simulation of Dynamic Systems
2. REC 072 Introduction to Smart Grid
3. REC 073 Cloud Computing
4. REC 074 Understanding the human being Comprehensively Human Aspiration audits Fulfilment

Departmental Elective – III

1. REC 070 Optical Network
2. REC 071 Information Theory and Coding
3. REC 072 Digital Image Processing
4. REC 073 Advance Programming in Engineering

Departmental Elective – IV

1. REC 075 Optical Communication
2. REC 076 Filter Design
3. REC 077 Applied Fuzzy Electronic Systems
4. REC 078 Computerized Process Control

## B.TECH. FOURTH YEAR

### B. TECH. EIGHT$^{TH}$ SEMESTER (VIII)

| No. | Subject Code | Name of the Subject | Periods | | | Evaluation Scheme | | | | Subject Total | Credit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Sessional Assessment | | | ESE | | |
| | | | L | T | P | CT | TA | Total | | | |
| THEORY SUBJECTS | | | | | | | | | | | |
| 1 | ROE08** | Open Elective-II | 3 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| 2 | REC 08* | Departmental Elective-V | 3 | 1 | 0 | 20 | 10 | 30 | 70 | 100 | 4 |
| 3 | REC 08* | Departmental Elective-VI | 3 | 0 | 0 | 20 | 10 | 30 | 70 | 100 | 3 |
| PRACTICAL/ DESIGN/ DRAWING | | | | | | | | | | | |
| 7 | REC851 | GD & Seminar | 0 | 0 | 3 | - | 100 | 100 | - | 100 | 2 |
| 8 | REC852 | Project | 0 | 0 | 12 | - | 250 | 250 | 350 | 600 | 12 |
| | | TOTAL | 9 | 1 | 15 | 60 | 380 | 440 | 450 | 1000 | 24 |

Open Elective-I

1. REC 081 Industrial Automation and Control
2. REC 082 Machine learning
3. REC 083 Soft Nano technology
4. REC 084 Values, Relation Ship & Ethical Human Conduct - For a Happy & Harmonious Society

Departmental Elective – IV

1. REC 080 Electronic Switiching
2. REC 081 Analytical Instrumentation
3. REC 082 Advanced Display Technologies & Systems
4. REC 083 Satellite & RADAR Systems

Departmental Elective – VI

1. REC 085 Wireless & Mobile Communication
2. REC 086 Voice over IP
3. REC 087 Speech Processing
4. REC 088 Micro & Smart Systems

## 2.1.3. State the components of the curriculum (5)

Categorize entire Curriculuminto Professional Core Courses, Science & Humanities, Programming, Interdisciplinary Projects /Seminar/Lab Practices. Map each category with POs and PSOs. Program curriculum grouping based on course components as shown in table 2.1.3a& 2.1.3b.

**PROGRAM CURRICULUM GROUPING BASED ON COURSE COMPONENTS AS FOLLOWS**

| S. No. | Subject Code | Subject Name | Total hours | Cr | Course Component |
|---|---|---|---|---|---|
| 1 | RAS103 | Engineering Maths-I | 4 | 4 | Basic Sciences |
| 2 | RAS101 | Engineering Physics-I | 4 | 4 | Basic Sciences |
| 3 | RAS151/RAS152 | Engg. Physics Lab/ Engg. Chemistry Lab | 2 | 1 | Basic Sciences |
| 4 | RAS203 | Engineering Maths-II | 4 | 4 | Basic Sciences |
| 5 | RAS201 | Engineering Physics-II | 4 | 4 | Basic Sciences |
| 6 | RAS202/REC201 | Engineering Chemistry/ Basic Electronics | 4 | 4 | Basic Sciences |
| 7 | RAS252/RAS251 | Engg. Chemistry Lab/ Engg. Physics Lab | 2 | 1 | Basic Sciences |
| 8 | ROE030 to 039/ RAS301 | Science Based Open Elective/Mathematics-III | 4 | 4 | Basic Sciences |
| 9 | RAS401/ROE040 to 049 | Mathematics-III/ Science Based Open Elective | 4 | 4 | Basic Sciences |
| 10 | RAS302/ RVE301 | Environment & Ecology/ Universal Human Values & Professional Ethics | 3 | 3 | Basic Sciences |
| | | **Credit Percentage** | **35** | **33** | **16.75%** |
| 1 | REE101/RME101 | Basic Electrical Engg/ Elements of Mechanical Engg. | 4 | 4 | Engineering Scinence |
| 2 | REC101/RAS102 | Basic Electronics/ Engineering Chemistry | 4 | 4 | Engineering Scinence |
| 3 | REE151/ RME151 | Basic Electrical Engg Lab/Elements of Mechanical Engg, Lab | 2 | 1 | Engineering Scinence |
| 4 | RME152/RCE151 | Workshop Practice/ Computer Aided Engg. Graphics | 2 | 2 | Engineering Scinence |
| 5 | RME201/REE201 | Elements of Mechanical Engg./Basic Electrical Engg | 4 | 4 | Engineering Scinence |
| 6 | RCS201/ RAS 204 | Computer System & Programming in C/ Professional Communication | 3 | 3 | Engineering Scinence |
| 7 | RME251 | Elements of Mechanical Engg Lab | 2 | 1 | Engineering Scinence |
| 8 | REE251 | Basic Electrical Engg Lab | 2 | 1 | Engineering Scinence |
| 9 | RCS251/ RAS 254 | Computer Progm. Lab/ Professional Communication Lab | 2 | 1 | Engineering Scinence |
| 10 | RCE251/RME252 | Computer Aided Eng. Graphics/ Workshop Practice | 2 | 2 | Engineering Scinence |
| | | Credit Percentage | **27** | **23** | **11.68%** |
| 1 | RAS 104/RCS101 | Professional Communication/Computer System & Programming in C | 3 | 3 | Humanities |
| 2 | RAS 154/RCS151 | Professional Communication Lab/ Computer Progm. Lab | 2 | 1 | Humanities |

| | | | | | |
|---|---|---|---|---|---|
| 3 | RVE301/RAS302 | Universal Human Values & Professional Ethics/ Environment & Ecology | 3 | 3 | Humanities |
| 4 | HU-501 | Engineering & Managerial Economics | 3 | 3 | Humanities |
| 5 | EHU-601 | Industrial Management | 2 | 2 | Humanities |
| | | **Credit Percentage** | **13** | **12** | **6.09%** |
| 1 | REC 301/EC 302 | Digital Logic Design | 3 | 3 | Program Core |
| 2 | REC 302/EC 301 | Electronic Devices and Circuits | 4 | 4 | Program Core |
| 3 | REC 303/EC 303 | Signals & Systems | 3 | 3 | Program Core |
| 4 | REE 305/EC 304 | Network Analysis & Synthesis | 3 | 3 | Program Core |
| 5 | REC 401/EC 401 | Microprocessors & Microcontroller | 3 | 3 | Program Core |
| 6 | REC 402/EC 404 | Electromagnetic Field Theory | 4 | 4 | Program Core |
| 7 | REC 403/EC 403 | Electronic Measurement & Instrumentation | 3 | 3 | Program Core |
| 8 | RCS 406/EC 402 | Data Structue & Algorithms | 3 | 3 | Program Core |
| 9 | EC 501 | Integrated Circuits | 4 | 4 | Program Core |
| 10 | EC 502 | Pricnciples of Communications | 4 | 4 | Program Core |
| 11 | EC 503 | Microprocessors | 4 | 4 | Program Core |
| 12 | IC 501 | Control System-I | 4 | 4 | Program Core |
| 13 | EC 504 | Antenna & Wave Propaagation | 3 | 3 | Program Core |
| 14 | EC 601 | Microwave Engineering | 4 | 4 | Program Core |
| 15 | /EC 602 | Digital Communication | 4 | 4 | Program Core |
| 16 | EC 603 | Integrated Circuit Technology | 4 | 4 | Program Core |
| 17 | EC 701 | Optical Fiber Communication | 4 | 4 | Program Core |
| 18 | EC 702 | Data Communication Network | 4 | 4 | Program Core |
| 19 | EC 703 | VLSI Design | 4 | 4 | Program Core |
| 20 | EC 801 | Wireless & Mobile Communication | 4 | 4 | Program Core |
| 21 | EC 802 | Electronics Switching | 4 | 4 | Program Core |
| 22 | REC 351/EC 352 | Digtal Logic Design Lab | 2 | 1 | Program Core |
| 23 | REC 352/EC 351 | Electronic Devices & Circuits Lab | 2 | 1 | Program Core |
| 24 | REC 353/EC 453 | Signals & Systems Lab | 2 | 1 | Program Core |
| 25 | REC 354/EC 353 | Electronics Workshop & PCB Design | 2 | 1 | Program Core |
| 26 | REC 451 | Microprocessors & Microcontrollers Lab | 2 | 1 | Program Core |
| 27 | REC 452/EC 452 | Advance Electronics System Instrumentation Lab | 2 | 1 | Program Core |
| 28 | REC 453/EC 454 | Electronics Instrumentation & Measurement Lab | 2 | 1 | Program Core |
| 29 | RCS 456/EC 451 | Data Structure & Algorithms Lab | 2 | 1 | Program Core |
| 30 | EC 551 | Integrated Ciruit Lab | 2 | 1 | Program Core |
| 31 | IC 551 | Control System Lab | 2 | 1 | Program Core |
| 32 | EC552 | Communication Lab-I | 2 | 1 | Program Core |
| 33 | EC553 | Microprocessors Lab | 2 | 1 | Program Core |
| 34 | EC 651 | Antenna & Microwave Lab | 2 | 1 | Program Core |
| 35 | EC 652 | Communication Lab-II | 2 | 1 | Program Core |
| 36 | EC 653 | CAD of Electronics Lab | 2 | 1 | Program Core |

| | | | | | |
|---|---|---|---|---|---|
| 36 | EC 751 | Advance Commuinication Lab | 2 | 1 | Program Core |
| 37 | EC 752 | Electronic Circuit Design Lab | 3 | 2 | Program Core |
| | | **Credit Percentage** | **112** | **95** | **48.22%** |
| 1 | EC 011 | Departmental Elective-I | 4 | 4 | Program Elective |
| 2 | EC 021 | Departmental Elective-II | 3 | 3 | Program Elective |
| 3 | EC 023 | Departmental Elective-III | 4 | 4 | Program Elective |
| 4 | EC 031 | Departmental Elective –IV | 4 | 4 | Program Elective |
| | | **Credit Percentage** | **15** | **15** | **7.61%** |
| 1 | OE 071-OE O74 | Open Elective-I | 4 | 4 | Open Elective |
| 2 | OE-081 OE-084 | Open Elective-II | 4 | 4 | Open Elective |
| | | **Credit Percentage** | **8** | **8** | **4.06%** |
| 1 | EC 654 | Seminar | 2 | 1 | Internship/Seminar |
| 2 | EC 753 | Industrial Training | 2 | 1 | Internship/Seminar |
| | | **Credit Percentage** | **4** | **2** | **1.02%** |
| 1 | EC 754 | Minor Project | 2 | 1 | Project |
| 2 | EC 851 | Major Project | 12 | 8 | Project |
| | | **Credit Percentage** | **14** | **9** | **4.57%** |
| | | **Over all Total contact hours** | **228** | **197** | **100** |

Table 2.1.3.a

| Course Component | No of Subject | Curriculum Content (% of total number of credits of the program) | Total number of contact hour | Total number of credits |
|---|---|---|---|---|
| Basic Sciences | 10 | 16.75% | 35 | 33 |
| Engineering Sciences | 10 | 11.68% | 27 | 23 |
| Humanities and Social | 5 | 6.09% | 13 | 12 |
| Program Core Theory & Program Core Labs | 37 | 48.22% | 112 | 95 |
| Program Electives | 4 | 7.61% | 15 | 15 |
| Open Electives | 2 | 4.06% | 8 | 8 |
| Project(s) | 2 | 4.57% | 14 | 9 |
| Internships/Seminars | 2 | 1.02% | 4 | 2 |
| **Total number** | **72** | **100%** | **228** | **197** |

Table 2.1.3b

**Program Curriculum and Teaching –Learning Processes**

Professional program core group mapping with hierarchical structure of courses in program curriculum states that the subjects taught cover the syllabi of major competitive examinations of the country (GATE, IES, IAS and various PSUs). The result of having taught such a curriculum is well reflected by the performances of the students in various examinations for employment and / or for higher education.

| **Professional program core group in program curriculum** | **Hierarchical structure of courses in program curriculum** |
|---|---|
| Integrated Circuit | Electronics Engineering REC 101/REC 201<br>Fundamental of Electronics Devices REC 302<br>Electronics Circuits REC 401<br>Integrated Circuits EC 501<br>Integrated Circuit Technology EC 603 |
| Control System | Electrical Engineering REE 101<br>Network Analysis & Synthesis REE 305<br>Electronics Instrumentation & Measurement REC 403<br>Control System IC 501 |
| Digital System Design | Switching Theory & Logic Design REC 301<br>Microprocessor & Microcontroller REC 401<br>VLSI Design EC 703<br>VHDL EC 032 |
| Signal Processing | Signal and System REC 303<br>Principle of Communication EC 501<br>Digital Communication EC 602<br>Digital Signal Processing EC 011<br>Data Communication & Network EC 702<br>Electronics Switching EC 802 |
| Microwave Engineering | Electromagnetic & Field Theory REC 402<br>Antenna & Wave Propagation EC 504<br>Microwave Engineering EC 601<br>Wireless & Mobile Communication EC 801<br>Satellite & Radar EngineeringEC 021 |

Table 2.1.3.c

## Program Curriculum and Teaching –Learning Processes

### 2.1.4. State the process used to identify extent of compliance of the curriculum for attaining the Program Outcomes and Program Specific Outcomes (10).

In Outcome based Education, assessment done through one or more than one processes carried out by the institution that identify, collect and prepare data to evaluate the achievements of program educational objectives, program outcomes and course objectives and outcomes.

| POs | Graduate attributes prescribed by NBA |
|---|---|
| PO-1 Apply knowledge of mathematics, statistics, computer science, and engineering as it applies to the fields of computer hardware and software. | Engineering Knowledge |
| PO-2 Identify, formulates, and solves hardware and software problems using engineering principles. | Problem Analysis |
| PO-3 Automate the real time problems, develop various web applications, desktop applications and design and conduct experiments ,implement programs as well as to organize ,to analyze and interpret data. | Design/ Development solution |
| PO-4 Design hardware and software systems, components, or processes to meet identified needs within economic, environmental and social constraints. | Conduct investigation of complex problems |
| PO-5 Use the techniques, skills, and modern Software and Hardware tools necessary for computer engineering practice. | Modern Tool Usage |
| PO-6 Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the computer science & engineering. | The Engineer and Society |
| PO-7 Understanding the impact of solutions provided by Computer Science & Engineering in social and environmental context. | Environment and Sustainability |
| PO-8 Understand the professional and ethical responsibility in engineering practice. | Ethics |
| PO-9 Function on multidisciplinary teams, working cooperatively, respectfully, creatively and responsibly as a member of a team. | Individual and Team work |
| PO-10 Communicate effectively by oral, written, and graphical means. | Communication |
| PO-11 Demonstrate the knowledge and understanding of engineering and management principles in the area of computer science and engineering to manage projects in multidisciplinary environments | Project Management and Finance |
| PO-12 Recognize the need to engage in life -long learning | Life Long Learning |

## Program Curriculum and Teaching –Learning Processes

The process used to identify extent of compliance of curriculum forattaining the POs and PSOs as follows.

- The curriculum comprises of General, Basic Sciences, Professionalcore and elective subjects relatedto electronics and communication engineering.
- Identify Course Outcomes (COs) for each subject.
- Mapping of Cos with POs and PSOs.
- Subjects are mapped with twelve (PO1 to PO12) Programme Outcomes (POs) and gaps are

The programme specific criteria are:

- Increased employability
- Professional ethics
- Competency with general awareness of engineering economics

| | |
|---|---|
| **PSO1** | **An** ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI, Embedded systems, Communication Systems, Digital & Analog Devices, etc |
| **PSO2** | **An** ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions. |
| **PSO3** | **Wisdom** of social and environmental awareness along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur |

**PO Assessment Tools:** Assessment tools are categorized into direct and indirect methods to assess the program educational objectives, program outcomes and course outcomes.

**Use of Rubrics for Evaluation and Assessment of POs:**

The Course/Programe outcomes are difficult to measure such as assessing critical thinking, creativity, analytical skills, and problem solving etc. Hence, the Department has adopted criterion referenced rubrics to assess the POs and COs. The Rubric criteria are either developed by Department faculty or sometimes even with consultation with students and distributed before an assignment, project or test. Rubrics are used for both formative and summative assessment of students. Same rubric is used for assessing an outcome so that the faculty is able to assess student progress and maintain the record of the same for each student.

**Program Outcome Assessment Process:**

For each outcome the program and course coordinators define performance indicators (assessment criteria) and their targets. Each performance indicator is aligned to the courses and targets are set for each performance indicator. The faculty members develop CO's according to PO's and then divideeach of their unit outcomes into elements of Blooms Taxonomy and define set of attributes for each outcome. These are used for planning lectures, assignments, tests, projects etc. while developing their course files. Each outcome is assessed

in several courses to ensure that students acquire an appropriate level in terms of knowledge/skills of an outcome. The course coordinators collect the qualitative and quantitative data and use these for outcome assessment in a continual process.

Each faculty pre-sets out targets for assessment of course outcomes and prepares analysis of their course outcome based on student performance, their own assessment, student feedback and present the same to the program and course coordinators along with his/her suggestion for improvement. The course assessment is done at both formative and summative levels.

- **Direct methods** display the knowledge and skills of the students from their performance in the continuous assessment tests, endsemester examinations, presentations and classroom assignments etc. These methods provide a sample of student knows and strong evidence of student learning.
- **Indirect methods** such as surveys ask the stake holders to reflect on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills and their values by different stakeholders.

## Program Curriculum and Teaching –Learning Processes

### 2.2. Teaching-Learning Processes (70)

### 2.2.1. Describe Processes followed to improve quality of Teaching & Learning (15)

The curriculum in Electronics and Communication Engineering lays great emphasis on deep understanding of fundamental principles and state-of-the-art knowledge of electronics. The curriculum is updated and changes are incorporated on the recommendations of the teaching faculty for submission to Board of Studies (BOS).

Several new elective courses are being introduced in B.Tech Programmes curriculum based on the current technology evolution. The following committees are involved to add suitable courses/topics to the course curriculum for improving the learning of the students:

1. The Departmental Core Committee comprising of faculty members periodically reviews the learning outcomes and suggests induction of new courses to improve the teaching-learning process.
2. The department conducts exit surveys from the passing out batches to identify the gaps in the curriculum.
3. Based on the PSOs suggestion abd feedback from stakeholder value added and professional course are being included.
4. The process of taking regular feedback from the recruiters of our students helps us in understanding the aspects of curriculum which are not aligned with the expectations of the industry.

**Process/Measure taken to reduce the gap:** Processes / Measures taken to reduce the curricular gaps towards the attainment of defined course outcomes and programme.

1. Based on vision and mission of the department, updation/addition of Labs and modification of syllabus is being done as per the industryrequirement. In consonance with addition/updation of new elective course is being done.
2. For the uplift of students and to bridge the industry academia gap the department has also started various credit & non credit value added courses viz Python, Android and Embedded System Design. This has enhanced improved the chances of placement of our students in various industries
3. Department organized workshop seesions by expert from industry.
4. For the preparation of GATE exam the Institute has been department successfully conducting preparatory classes.
5. Department organizes lectures on modern tools and technologies for students.

## Program Curriculum and Teaching –Learning Processes

### Academic calendar:

Institutional calendar has been prepared. Institute has introduced many other events which are useful in overall development of the students. For example, training and placement skill development program is a part of the academic calendar. During this event, in addition to soft skill development emphasis is also given on personality development of the students so that they get employed.

### Academic calendar for Session 2018-19 (CAY)

| S. No. | Activity | DATES | |
|---|---|---|---|
| | | ODD SEMESTER | EVEN SEMESTER |
| | | **For I, III, V& VII Semester** | **For II, IV, VI& VIII & Semester** |
| 1 | Commencement of Semester | July 24 , 2018 | January 11 , 2019 |
| 2 | Registration of student in B.Tech I$^{st}$ year, MBA I$^{st}$ year, MCA, I$^{st}$ year, B.Tech II$^{nd}$ year (Lateral Entry) and MCA II$^{nd}$ year (Lateral Entry) | July 20-23 , 2018 | January 11 , 2019 |
| 3 | Registration of students in B.Tech II$^{nd}$ year (except students directly admitted to II$^{nd}$ year in 2018), M.Tech II$^{nd}$ year, MBA II$^{nd}$ year and MCA II$^{nd}$ year (except students directly admitted to II$^{nd}$ year in 2018) and Pre-Ph.D. course work. | July 24 , 2018 | January 12 , 2019 |
| 4 | Registration of student B.Tech III$^{rd}$ Year and MCA III$^{rd}$ Year | July 25 , 2018 | January 14 , 2019 |
| 5 | Induction Programme for New Students | July 25- August 14 , 2018 | -- |
| 6 | Registration of students in B.Tech IV$^{th}$ year | July 26, 2018 | January 14 , 2019 |
| 7 | Register of Pre- Ph.D. (for courses offered in M.Tech. I$^{st}$ year), M.Tech I$^{st}$ year | As per AKTU schedule | January 11 , 2019 |
| 8 | Commencement of classes | August 01, 2018 | January 15 , 2019 |
| 9 | Online ERP registration of New students | September 06-10, 2018 | -- |
| 10 | Filling of Enrolment form of newly admitted students in hard copy | September 28 – October 03, 2018 | -- |
| 11 | Filling of Examination forms for end semester examinations by the student | October 04-08, 2018 | February 25-28, 2019 |
| 12 | Online Enrolment of newly admitted students on AKTU website | As per AKTU schedule | -- |
| 13 | I$^{st}$ class test | October 13-17, 2018 | March 14-18, 2019 |
| 14 | Departmental Societies Function Week | November 12-18, 2018 | -- |
| 15 | Sports/Cultural Meet | To be decided by Chairman ISSACC/Director | To be decided by Chairman ISSACC/Director |
| 16 | II$^{st}$ class test | November 27-30, 2018 | April 24-27, 2019 |
| 17 | End semester Theory and Practical examination | December 11-30, 2018 | May 06-25, 2019 |
| 18 | Winter/Summer Vacation for Faculty and Students | December 31, 2018 – January 09, 2019 | May 27- July 20, 2019 |
| 19 | Commencement of odd semester for the session 2018-2019 | | July 24, 2019 |

Table 2.2.1.d

**Program Curriculum and Teaching –Learning Processes**

**Academic calendar for Session 2017-18 (CAYm1)**

| S. No. | Activity | DATES | |
|---|---|---|---|
| | | ODD SEMESTER | EVEN SEMESTER |
| | | **For I, III, V& VIISemester** | **For II, IV, VI& VIII & Semester** |
| 1 | Commencement of Semester | July 24 , 2017 | January 04 , 2018 |
| 2 | Registration of Pre- Ph.D. (for courses offered in M.Tech II$^{nd}$ year), M.Tech II$^{nd}$ year, MBA II$^{nd}$ year and MCA III$^{rd}$ year | July 24 , 2017 | January 04 , 2018 |
| 3 | Registration of B.Tech IV$^{th}$ Year | July 24 , 2017 | January 04 , 2018 |
| 4 | Registration of B.Tech III$^{rd}$ Year | July 25 , 2017 | January 04 , 2018 |
| 5 | Registration of B.Tech II$^{nd}$ Year and MCA II$^{nd}$ Year | July 26 , 2017 | January 05 , 2018 |
| 6 | Registration of B.Tech, MCA, MBA I$^{st}$ year and B.Tech II$^{nd}$ year (Lateral Entry), MCA II$^{nd}$ year (Lateral Entry) | As per UPSEE- 17 schedule | January 05 , 2018 |
| 7 | Register of Pre- Ph.D. (for courses offered in M.Tech. I$^{st}$ year), Registration of M.Tech I$^{st}$ year | As per AKTU schedule | January 05 , 2018 |
| 8 | Commencement of classes | July 27, 2017 for all students (except I$^{st}$ year ). August 01, 2017 for all I$^{st}$ year students | January 06 , 2018 |
| 9 | Filling of Enrolment form of newly admitted students in hard copy | August 21-24, 2017 | -- |
| 10 | Filling of Examination forms for end semester examinations by the student | August 28-31, 2017 | January 22-25, 2018 |
| 11 | Online Enrolment of newly admitted students on AKTU website | As per AKTU schedule | -- |
| 12 | I$^{st}$ class test | October 03-07, 2017 | February 23-27, 2018 |
| 13 | Departmental Societies Function Week | October 30 – November 05, 2017 | -- |
| 14 | Sports/Cultural Meet | Sports meet dates to be decided by Chairman ISSACC/Director | Cultural meet dates to be decided by Chairman ISSACC/Director |
| 15 | II$^{st}$ class test | November 15-18, 2017 | April 18-21, 2018 |
| 16 | Last date for semester teaching | November 30, 2017 | May 05, 2018 |
| 17 | End semester Practical examination | December 01-07, 2017 | May 07-10, 2018 |
| 18 | End semester Theory examination | December 08-23, 2017 | May 12-26, 2018 |
| 19 | Winter/Summer Vacation for Faculty and Students | December 24, 2017-January 03, 2018 | May 28 –July 20, 2018 |
| 20 | Commencement of odd semester for the session 2018-2019 | | July 24, 2018 |

Table 2.2.1.e

**Program Curriculum and Teaching –Learning Processes**

**Academic calendar for Session 2016-17 (CAYm2)**

| S. No. | Activity | DATES | |
|---|---|---|---|
| | | ODD SEMESTER | EVEN SEMESTER |
| | | **For I, III, V & VII Semester** | **For II, IV, VI & VIII Semester** |
| 1 | Commencement of classes session 2016-2017 | July 16 , 2016 | Jan 16 , 2017 |
| 2 | Registration of M.Tech 2nd year and MCA 3rd year | July 16 , 2016 | Jan 16 , 2017 |
| 3 | Registration of B.Tech 4th Year | July 18 , 2016 | Jan 16 , 2017 |
| 4 | Registration of B.Tech 3rd Year | July 19 , 2016 | Jan 16 , 2017 |
| 5 | Registration of B.Tech 2nd Year and MCA 2nd Year | July 19 , 2016 | Jan 16 , 2017 |
| 6 | Commencement of classes | | |
| 7 | Registration of B.Tech, MCA, MBA, and M.Tech 1st year | July 28-30 , 2016 | Jan 16 , 2017 |
| 8 | Commencement of classes | July 20 , 2016 for all students (except 1st year) august 1, 2016 for1st year student | Jan 16 , 2017 |
| 9 | Enrolment of the newly admitted students | | - |
| 10 | Online enrolment of the newly admitted students on AKTU website | As per AKTU schedule | - |
| 11 | 1st class test | October-7-17, 2016 | March 06-09, 2017 |
| 12 | Sports/Cultural Meet | To be decided by chairman ISSACC/Director | To be decided by chairman ISSACC/Director |
| 13 | Filling up of the examination forms of semester by the students | November 23-26,2016 | April 03-06, 2017 |
| 14 | 2nd Class test | November 28- December 01, 2016 | April 19-22, 2017 |
| 15 | Last date of semester teaching | December 07, 2016 | May 07, 2017 |
| 16 | End semester Practical/Theory Examinations | December 08, 2016-January 03, 2017 | May 25 – June 08, 2017 |
| 17 | Winter Vacations\Summer Vacations | January 04 - January15, 2017 | June 01- July 23, 2017 |
| 18 | Commencement of Class session 2017-2018 | | July 24, 2017 |

Table 2.2.1.f

## Program Curriculum and Teaching –Learning Processes

### 2.2.1 Describe Processes followed to improve quality of Teaching & Learing:

- **Lecture method and Interactive learning:** The faculty use chalk and board and audio visual aids in teaching. Students are also encouraged to actually interact during the lecture hour by getting the doubts clarified on the spot. Faculty also use models, charts for interactive teaching
- **Project-based learning:** During the period of study in the 6th to 8th semester, many real time projects are given to the students and they are guided by faculty members.
- **Computer-assisted learning:** The Department has sufficient number of computers, printers, LCD projectors, application softwares and system softwares which are effectively used for teaching. The students are also encouraged to develop softwares for the solution of the assignments and tutorials. Many final year projects are completed through the use of softwares.
- **SMART classroom:** Faculties are using SMART classroom to provide interactive session. LCD Projector is used for demonstration, video (NPTEL), audio of classes. Following are some additional pedagogical initiatives taken by the Department in addition to Chalk &Talk, lectures, assignments, power point presentation, tutorials,
- **Modes of content delivery:** As evident from above, both Traditional and Innovative Techniques are used to ensure course objectives and delivered effectively such as Chalk and board, Laboratory /workshop practical, tutorials, Seminars /guest lectures, Assignments, Surprise Tests and technical Quizzes, practical training in industry/project work in industry, Industrial training and PPTs which are more traditional. Innovative approaches for delivery strategies are used such as Learning through Problem solving, Designing lab experiments, E-tutorials, NPTEL, Problem solving/ Brain storming, Self-learning through simulations/software

**Student Feedback on Teaching processand action Taken: The** faculty is now oriented towards Outcome Based Education (OBE) and are actively utilizing the OBE to cater the learning needs of students in innovative ways.

The faculty of Department adopts various innovative Teaching & Learning methodologies to createthe best learning environment for student. These methodologies including traditional black board teaching, presentations, video lecturing, and collaborative learning methods are used where every concept is explained with real world illustrations, design and problematic aspects are conveyed by a short cut method.

## Program Curriculum and Teaching –Learning Processes

- To identify, formulate and solve complex engineering problems.
- To use the skills, techniques and modern engineering tools and software necessary for engineering course.
- Students gain knowledge by conducting workshops, industry visits, guest lectures and discussions with technical professionals.
- For engineering students, Project Work allows them to gain in depth knowledge as they carry out literature survey of the concepts, and hands on experience of the tools and hardware.
- Through the experiences of independent research, student sare better prepared in the areas of critical thinking and learning. This encourages the students to pursue graduate studies and research work.
- Subject allotment is done well in advance for the faculty to prepare lesson plans, course plan, soft and hard copies of the lecture notes.
- As per the **Curriculum** (Course syllabus) guidelines 8-10 experiments are to be conducted. One or two experiments are conducted beyond the specified list for relevant courses. Laboratory manual explaining the details of the experiment, designing issues are available with the course teacher and are given to students at the commencement of the semester.
- Lecture Session duration is one period (50 minutes) and Laboratory duration is 2 periods.
- Assignments are given to students for their better performance.
- Invited talks and seminars on the current trends are done regularly from the industry persons.
- Tutorial/Remedial classes are conducted for the slow learners based on their performance in external exams and after the first internals.
- Motivating and guiding students for higher studies. Technical quizis conducted for the students.
- All the faculties are requested to maintain Attendance registers, course files, Work dairies.
- Industrial visits are conducted at least once a year to reduce the gap between industry and Institute.
- Workshops are organized to help the students to understand concepts beyond Curriculum.
- One-to-one discussion, interaction between faculty and students has increased confidence levels of the students.
- Encourage the bright students to attend more work shops and technical talks
- Identification of bright and weak students. Motivate the weak students to attend tutorials and help them solve more problems
- The knowledge of basic sciences, humanities, industry related curriculum, course on ethical values imbibe in the students the core skills required for their professional accomplishment.

**Program Curriculum and Teaching –Learning Processes**

- Understanding and practice of core Electronics & Communication Engineering subjects along with seminar / presentations related to project help in the development of effective communication skills needed for their career building attributes.
- Revised **Curriculum** (Course syllabus) based on Workshop on "Curricula Review for B.Tech Electronics and Communication Engineering" organized by Department of Electronics, Institute of Engineering and Technology, UPTU, Under Technical Education Quality Improvement Program (TEQIP), held on 15th -16th June, 2015.
- Improve the quality of teaching and learning the additional contents to meet the POs as listed in the table as given below

Course Delivery Methods as shown in Table given below

| Course Delivery method | Justification |
|---|---|
| Lecturing | Faculties of the ECE Department effectively teach students about the concerned subject.<br>Faculty conveys significant information, history, background, theories, analogies and equations to makethe concepts clear.<br>Faculty relate engineering practiceto thereal world and application<br>Faculty helps the slow learners by solving more number of similar problems.<br>Previous year End Semester Examination question papers will be solved.<br>Regular assignments will be given and solutions of the assignment will be provided to the students. |
| Presentations (Still and Video) | Presentations are given to illustrate ideas and concepts.<br>Presentations give information with data relating to an issue.<br>Videos effectively communicate the working of actual engineering solutions which are helpful for a long learing in the appropriate societal context. |
| Experimental and laboratory work | Laboratory work demonstrates show theory can be verified by experiments through interpretation of results.<br>Experiments are normally done in groups there by encouraging students to do team work. |
| Group tasks (Projects) | Laboratory work demonstrates show theory can be verified by experiments through interpretation of results.<br>Experiments arenormally donein groupsthereby encouragingstudents todo team work. |

Table 2.2.1.b

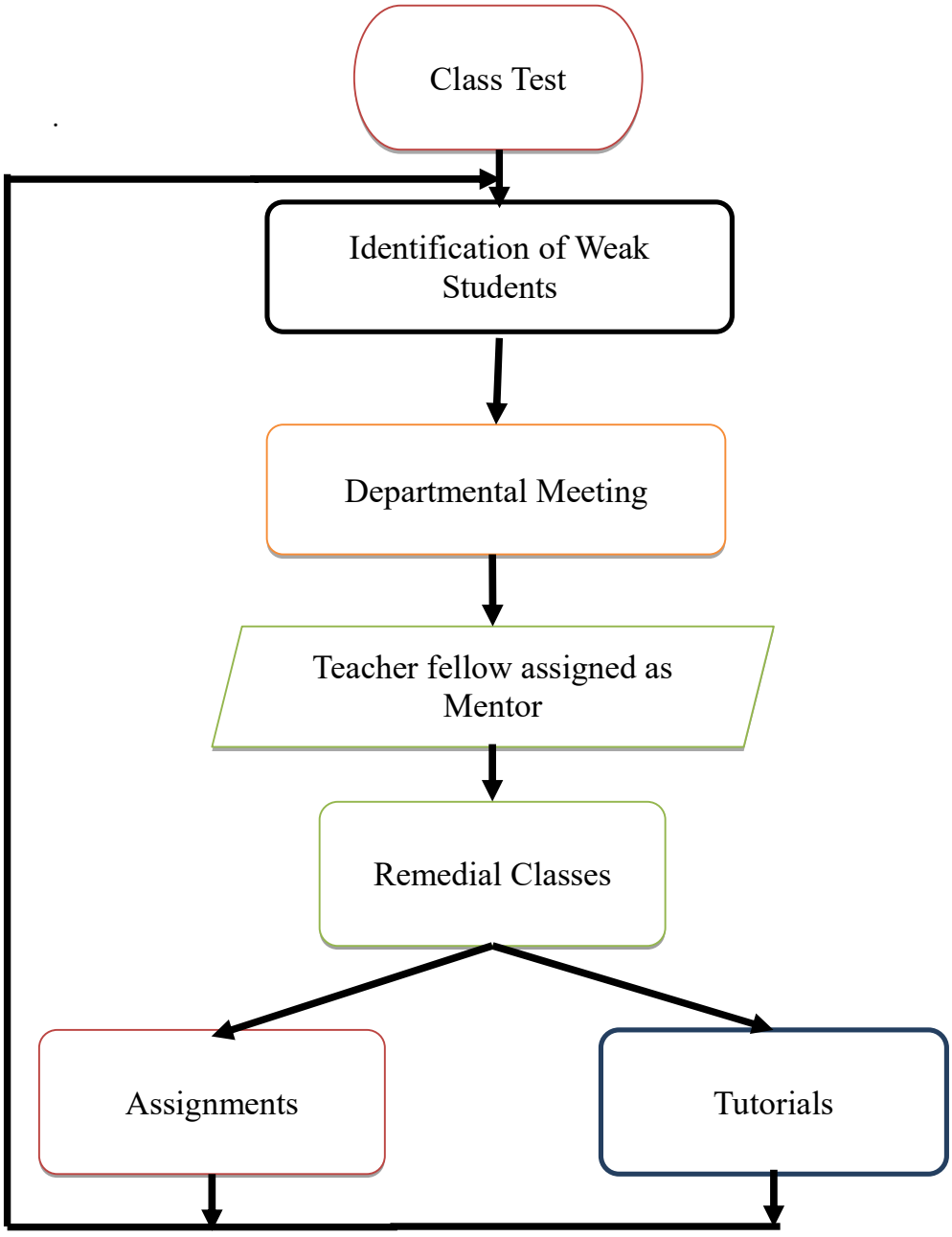
## Program Curriculum and Teaching –Learning Processes

- **Prerequisite course mapping:** The program curriculumstructure and courses have been so designed as to ensure that all the prerequisite courses are taught before the higher level courses (semester wise) as listed below.

| S.NO | Course Code | Course Name | Course Code | Course Name |
|---|---|---|---|---|
| 1 | AS-103 | Mathematics I | - | Mathematics at intermediate level |
| 2 | AS-101 | Engineering Physics-I | - | Physics at intermediate level |
| 3 | AS-102 | Engineering Chemistry | - | Chemistry at intermediate level |
| 4 | EE-101 | Electrical Engineering | - | Physics at intermediate level |
| 5 | EC-101 | Electronics Engineering | - | Physics at intermediate level |
| 6 | ME-101 | Manufacturing Processes | - | Physics at intermediate level |
| 7 | AS-203 | Mathematics II | AS-103 | Mathematics I |
| 8 | AS-202 | Engineering Physics-II | AS-101 | Engineering Physics-I |
| 9 | ME-202 | Engineering Mechanics | - | Physics at intermediate level |
| 10 | CS-201 | Computer Concept & Programming In C | - | - |
| 11 | AS-204 | Professional Communication | - | - |
| 12 | AS-205 | Environment & Ecology | - | - |
| 13 | HU-301 | Industrial Psychology | - | - |
| 14 | AS-301 | Mathematics III | AS-203 | Mathematics II |
| 15 | EC-301 | Electronic Devices | EC-101 | Mathematics I Electronics Engineering |
| 16 | EC-302 | Digital Electronics | EC-101 | Electronics Engineering |
| 17 | EC-303 | Electromagnetic Field Theory | AS-203 | Mathematics II |
| 18 | EC-304 | Fundamentals of Network Analysis and Synthesis | EE-101/ EC-101/ AS203 | Electrical Engineering/ Electronics Engineering/ Mathematics II |
| 19 | HU-111 | Human values and Professional ethics | - | |
| 20 | HU-402 | Industrial Sociology | - | |
| 21 | EC-401 | Electronic Circuits | EC-304 | Electronic Devices |
| 22 | EC-402 | Computer Architecture & Organization | EC-302 | Digital Electronics |
| 23 | EC-403 | Electronic Instrumentation and Measurements | EC-301 | Electronic Devices |
| 24 | EC-404 | Signals and Systems | AS-301/ EC-304 | Mathematics III/ Fundamentals of Network Analysis and Synthesis |
| 25 | EC-501 | Integrated Circuits | EC-401 | Electronics Engineering , Electronic Circuits |
| 26 | EC-502 | Principles of Communication | EC-404 | Signals and Systems |
| 27 | EC-503 | Microprocessors | EC-402 | Computer Architecture & Organization |
| 28 | EC-504 | Antenna & Wave Propagation | EC-303 | Electromagnetic Field Theory |
| 29 | IC-501 | Control Systems-I | EC-404 | Signals and Systems |
| 30 | HU-501 | Engineering and Managerial Economics | - | - |
| 31 | HU-601 | Industrial Management | - | - |
| 32 | EC-601 | Digital Communication | EC-502 | Principles of Communication |
| 33 | EC-602 | Digital Signal Processing | EC-404 | Signals and Systems |
| 34 | EC-603 | Microwave Engineering | EC-504 | Antenna & Wave Propagation |
| 35 | EC-604 | Introduction to Electric Drives | EC-501 | Integrated Circuits |
| 36 | EC-701 | Optical Communication | EC-504 | Antenna &Wave Propagation |
| 37 | EC-702 | Data Communication Networks | EC-601 | Digital Communication |
| 38 | EC-703 | VLSI Design | EC-501 | Integrated Circuits |
| 39 | EC-801 | Wireless & Mobile Comm. | EC-702 | Data Communication Networks |
| 40 | EC-802 | Electronics Switching | EC-702 | Data Communication Networks |
| 41 | EC-031 | Optical Networks | EC-701 | Optical Communication |

Table 2.2.1.c

## Methodology to Support Weak Student



**Program Curriculum and Teaching –Learning Processes**
**Contribution to Outcomes will be achieved through content delivery:**

- **Maintenance of Course files:**For each course, a course file is prepared by the concerned faculty. The course file consists of following items:
- **Teaching plan:** Teaching plans for each and every course are prepared by the faculty. Whole syllabus is divided into 5 units and 40 lectures as per the teaching scheme prescribed by the university. The course objectives and course outcomes are defined for each course in line with the POs.
- **Lesson plan:** Lesson plans are prepared for each lecture in the teaching plan by the faculty before the commencement of the semester and it is duly approved after careful examination by the Head of the Department and made available to the students. The lesson plan encompasses the learning outcomes and the assessment of outcomes.
- **Question Bank:** Question banks are prepared for each topic in the course based on the course objectives and course outcomes and considering the nature of the university question papers. The previous question papers of University are also maintained in the course files. Assignment questions list and test question papers along with key solutions are included in the course files.

## Program Curriculum and Teaching –Learning Processes

### 2.2.2. Quality of end semester examination, internal semester question papers, assignments and evaluation (15)

**A. Process for Internal Semester Question Paper setting and evaluation:** In a semester, there are two tests.

i. Defining Course Outcomes for every course (subject)

ii. Setting of questions of internal question papers based on reference to prescribed texts, model question papers, mapping of questions to CO and Blooms Taxonomy (BT) defined level.

iii. Defining of scheme of evaluation for the question paper.

iv. Evaluation of answer sheets based on scheme.

**B. Process to ensure questions from outcomes/learning level perspectives:** Each question is mapped with COs & Blooms taxonomy (BL) levels.Student who answered to particular question is taken into consideration and average of all students marks is taken for CO-PO attainment.

**C. Evidence of COs Coverage in class test/Mid-term test:** Individual student's answer copies are evaluated and question answered by student is mapped with COs and POs Sample.

**D. Quality of assignment and its relevance to COs:**As part of continuous improvement in terms of improving teaching performance and better outcome from students assignment questions will be given to students and evaluate the same and mapped with CO's.

**E.QuestionPaper and Assignment:** Sample of Mid semester Question paper and assignment as given below:

**SampleofQuestionPaperofMid SemesterExamination-I**

ELECTRONICS AND COMMUNICATION ENGINEERING

FIRST MID SEMESTER (CLASS TEST) EXAMINATION EC 703 VLSI DESIGN

TIME: 1 HOUR MAX MARKS: 15

| QNo. | Question Paper Based On Course Outcomes According To Bloom's Cognitive Level | Marks | CO | BL |
|---|---|---|---|---|
| 1 | **(a) Discuss** VLSI design methodology (Y Chart) & MOS Scaling<br>(b) **Write short notes** on CAD Tools for VLSI Design | 2<br>2 | CO1 | L1<br>L2 |
| 2 | **Calculate** the **noise margin** of the circuits. Consider a CMOS inverter circuits with the following parameters $V_{DD}$ = 3.3V, $V_{Ton}$ = 0.6V, $V_{Top}$= -0.7V, $k_n$ = 200μA/$^2$, $k_p$=80μA/$V^2$, $k_R$ = 2.5 | 2+2 | CO2 | L3 |
| 3 | **Determine** the $\left(\frac{W}{L}\right)$ ratios of the nMOS and the pMOS transistors such that the switching threshold is $V_{th}$ = 1.5V for a CMOS inverter, with the following device parameters, $V_{DD}$ =3V, $V_{Ton}$= 0.6V, $V_{Top}$ =-0.7V , $\mu_n C_{ox}$ =60μA/$V^2$, $\mu_p C_{ox}$=20μA/$V^2$, λ= 0. | 4 | CO2 | L3 |
| 4 | **Discuss** the operation of five stage Ring Oscillator circuits &**determine** the oscillation frequency with PDP ($R_n$=8kΩ, $R_p$=24kΩ, $C_{outn}$ =4.8fF, $V_{DD}$ =5V). | 1+3 | CO2 | L2<br>L3 |
| 5 | **Determine t**he intrinsic propagation delay $t_{PHL}$+$t_{PLH}$ of a three-input NOR gate using minimum size transistor ($R_n$=8kΩ, $R_p$=24kΩ and $C_{outn}$ =4.8fF). Calculate the circuit delay also when the gate is driving a load capacitance of 100fF. | 3+1 | CO2 | L3 |

## Program Curriculum and Teaching –Learning Processes

## Sample of Question Paper of Mid Semester Examination-II

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**SECOND MID SEMESTER EXAMINATION**

EC 703 VLSI DESIGN

TIME: 1 HOUR MAX MARKS:30

| * Q. | **Question Paper Based On Course Outcomes According To Bloom's Cognitive Level** | **Marks** | **CO** | **BL** |
|---|---|---|---|---|
| 1 | **Elaborate** how domino CMOS logic overcomes charge sharing problem with a suitable example. | 5 | CO4 | L4 |
| 2 | **Discuss** transmission gates.**Implement** a 4*1 multiplexer using transmission gate. | 5 | CO3 | L4 |
| 3 | **Design** circuit described by the boolean function $Y=A.(B+C)(\overline{D+E})$ using CMOS logic.**Calculate** equivalent CMOS inverter circuit for simultaneous switching of all inputs assuming that (W/L)=10 for all pMOS transistor and (W/L)= 5 for all nMOS transistor. | 5 | CO3 | L4 |
| 4 | Draw a Domino CMOS diagram circuit that implements the following equation Z= (A+B+C+D)(E+F+G)(H+I) . Assume that only A,E,H inputs are high and other inputs are low, then draw and equivalent circuit for this case by using (W/L)=30/2 for all transistors. | 5 | CO3 | L4 |
| 5 | **Discuss** the operation of CMOS SRAM with its circuit diagram | 5 | CO4 | L2 |
| 6 | Consider CMOS inverter circuit with lumped output capacitance having $V_{DD}$ = 3.3 V. The I-V characteristics of the nMOS transistor are specified as follows: when $V_{GS}$ = 3.3 V, the drain current reaches its saturation level Isat = 2 mA for $V_{DS} \geq 2.5$ V. The input signal applied is a step pulse that switches instantaneously from 0 V to 3.3 V**. Calculate** the delay time necessary for the output to fall from its initial value of 3.3 V to 1.65 V, assuming an output load capacitance of 300 fF. | 5 | CO2 | L4 |
| 7 | Draw the digital model of CMOS inverter and **derive** the expression for delay times. | 5 | CO2 | L3 |
| 8 | **Define** the terms Controllability and Observability. **Write** a short note on built in self test(BIST) technique | 5 | CO5 | L1 |

## SampleofAssignment-

| Q. No | Note: Attemptall questions. Totalmarks:5 | CO | Levels of Bloom's taxonomy |
|---|---|---|---|
| 1. | Discuss VLSI design process with Moore's law and Y chart | CO1 | L1 |
| 2. | Draw the different type of MOS inverter circuits and their transfer characteristics and compare their relative advantages and disadvantages. | CO2 | L2 |
| 3. | Derive the expression for rise time and fall time of CMOS inverter. | CO2 | L1 |

**Program Curriculum and Teaching –Learning Processes**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**THIRD MID SEMESTER EXAMINATION 2018-19**

EC 703 VLSI DESIGN

TIME: 1 HOUR MAX MARKS:30

| Q. | **Question Paper Based On Course Outcomes According To Bloom's Cognitive Level** | **Marks** | **CO** | **BL** |
|---|---|---|---|---|
| 1 | What are various processes of CMOS fabrication? Illustrate the main steps in typical n well CMOS fabrication with neat diagrams. | 6 | CO1 | L4 |
| 2 | Define the terms :RegularitY ,Modularity and Locality. Draw the stick diagram of two input CMOS NAND gate. | 6 | CO1 | L4 |
| 3 | Describe the working of DRAM with its circuit diagram. | 6 | CO4 | L2 |
| 4 | Implement CMOS edge triggered Master slave D flip flop and explain its working with input and output waveforms. | 6 | CO3 | L4 |
| 5 | Elaborate the working of NORA CMOS logic with example. | 6 | CO4 | L3 |
| 6 | What are various sources of power dissipation in CMOS logic circuits? | 6 | CO5 | L1 |
| 7 | Discuss Elmore delay. In CMOS inverter power supply $V_{DD}$=5V, determine the fall time when Vout=$V_{90\%}$=4.5V AND $V_{OUT}$=$V_{10\%}$=0.5V, the output load capacitance is 1pF. The MOS transistor parameters are $V_{Tn}$=1V, unCox=20uA/$V^2$, (W/L)n=10 | 6 | CO2 | |

**2.2.3. Quality of Student Projects (20)**

**Initiatives:**

- The student's projects are selected in line with Department Vision, Mission and Program outcomes.
- Students are provided with brief idea of various Professional program core group in programme Curriculum as given in section fields 2.1.3.2 forselecting the project ideas.
- The list of previous year projects are displayed on the notice board which ensures no repetition of project workand also encourage students to enhance the previous works.
- The faculties are encouraging the students to carryout in house projects and support will be provided with all necessary software and hardware.
- Encourage students to participate in project exhibitions/Experiments conducted at national level and International Level. The project exhibition was aimed to provide common platform to exhibit their innovations and their work towards excellence in latest technology.

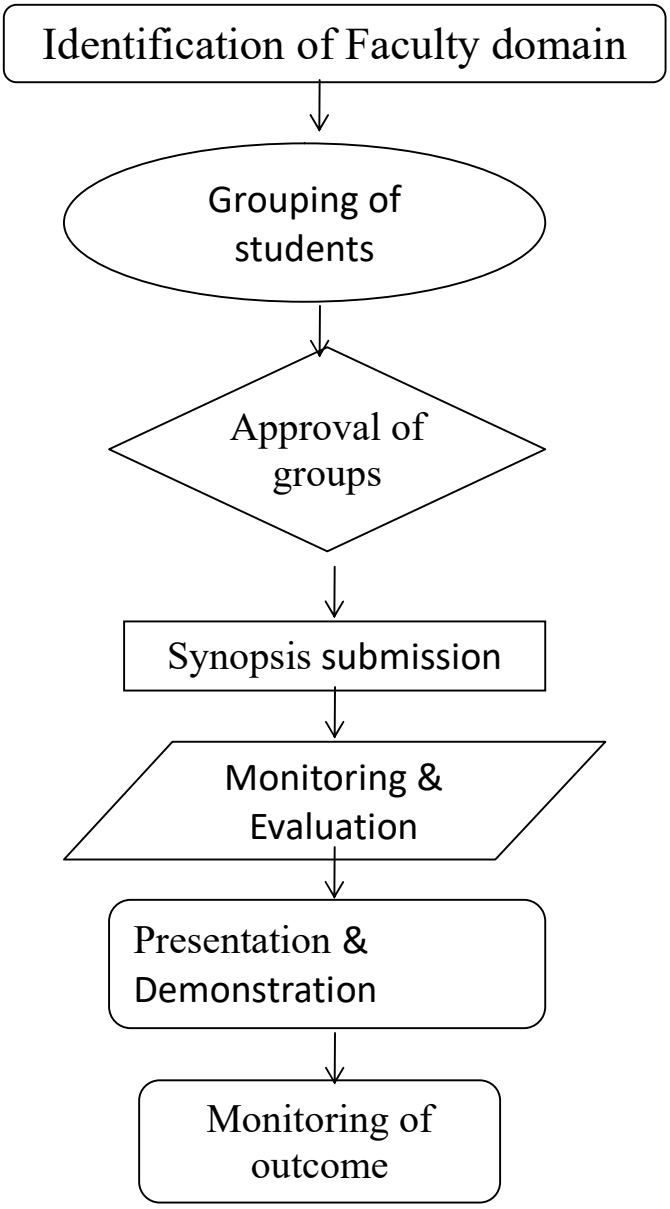
**Project Implementation:**

- A project coordinator is appointed by the Head of the Department who is responsible for planning, scheduling and execution of all the activities related to thestudent projectwork.
- Project presentation is taken thrice per semester in the presence of a project panel as well as weekly/bi-weekly meetings and discussion with the concerned project supervisor.
- Projects given to the students are related to state of art, industry relevant, hardware, and latest software.
- Projects offered are with latest and new technological development in the area of power system.
- Projects are based on mathematical modelling through simulation to analyze the operation and performance under various operating condition.
- The hardware prototyping through various building blocks are carried out in the respective laboratories for these projects.

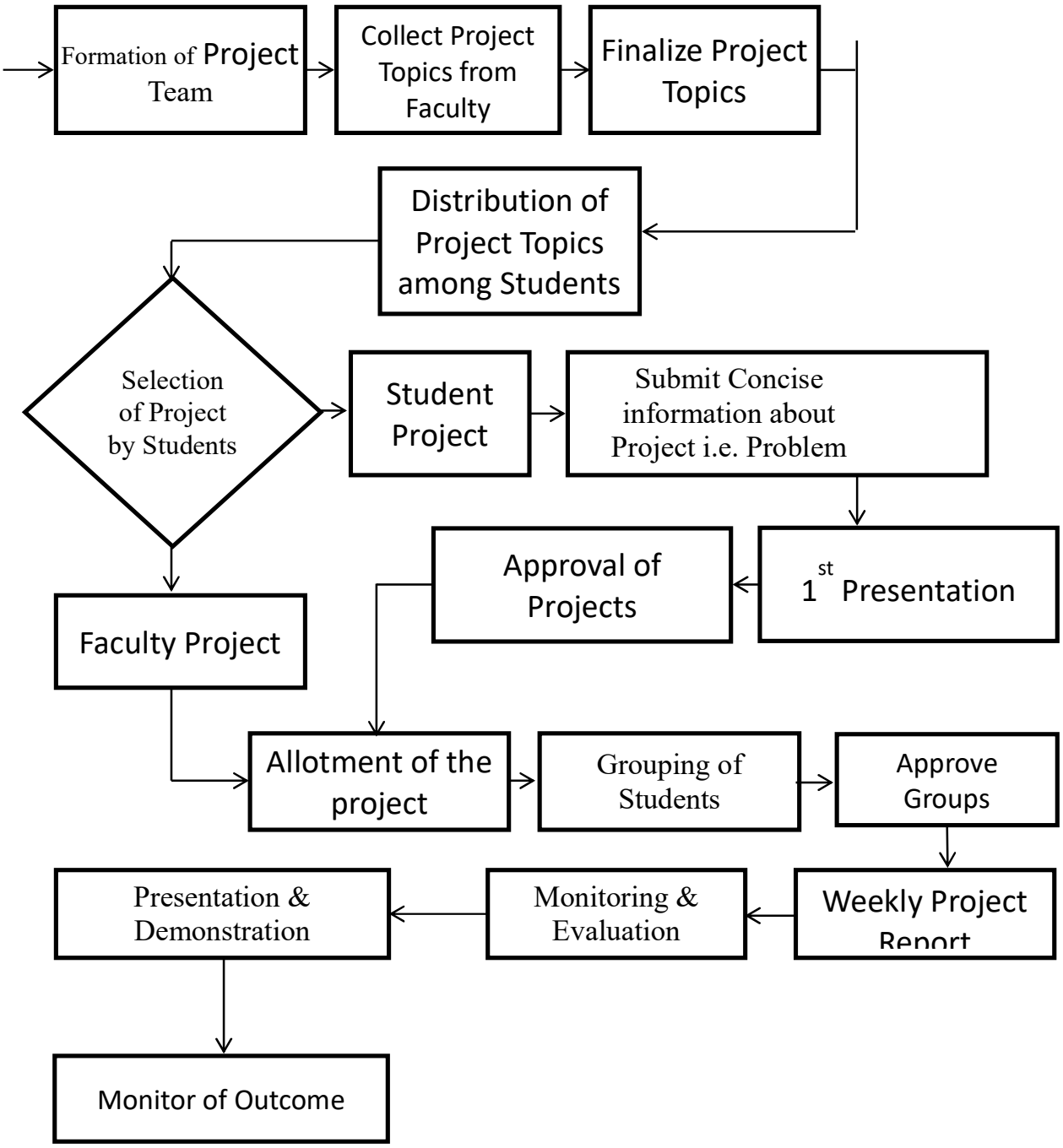
**Project Implementation Impact Analysis:**

- New innovative ideas are born for project work
- Skills or abilities of students improved.
- Knowledge on various aspects of project management were developed
- Confidence level of the students was boosted
- Improved teamspirit
- Implementation and deployment of the project for social benefits.
- Document preparation and presentation.

# Final Year Project Process



# Final Year Project Process



**Program Curriculum and Teaching –Learning Processes**
**Guide lines for evaluation of project work may include the following:**

- Nature of project
- Quality of work report and final outcome
- Presentation/ Viva-Voce
- Eachcomponent/element to be evaluated and weightage is to be assigned to each component is given in Table below for awarding sessional marks

| S.No. | Items | Maximum Weightage |
|---|---|---|
| 1. | **Nature of Project**<br>Relevance (5%)<br>Novelty/ Originality (5%)<br>Degree of Challenges Involved (5%) | 15% |
| 2. | **Quality of work Report and Final Outcome**<br>I.Quality of work (20%):<br>General appearance, binding and neatness; Utility/feasibilityfor practicalapplications; Organization and presentation of text; language and style; quality of diagrams/ graphs etc,; accuracy in drawing conclusions; cross references; bibliography; suggestions for further work.<br>II.Quality of Final Outcome (30%)<br>Aesthetics; functionality; user friendliness; cost effectiveness. | 50% |
| 3. | **Presentation/ Viva-voce**<br>Understanding Concepts, Principles, Practices, Design Considerations, Results, Implementation, etc, (15%)<br>Communication Skills (10%)<br>Viva Voce Skills (10%) | 35% |

Table 2.2.3a

## Program Curriculum and Teaching –Learning Processes

**Minor Project:**

As per the Program Curriculum, the student has to complete minor project in seventh semester. The project work is done inside the campus. The project work is executed under the guidance of a faculty member. Finally, the project work is assessed by internal examiners through presentation and viva- voce.

**CO1:** Able to acquire system integration skills, documentation skills, project management skills and problem solving skills.

**CO2:** Able to identify problems and solutions and also solve real-life problems.

**CO3:** Able to develop professionalism.

**CO4**: Able to analyze, develop and demonstrate the Electronics and Communication Engineering application.

**CO5:** Able to develop oral as well as written presentation skills.

**Major Project:**

Every final year student undertakes project which is spread over a period of one semester. The student selects a topic of his/her interest and then performs literature survey, formulates the problem formally and then implements it.

The project is carried-out under guidance of faculty member. The project work is assessed by external and internal examiners through presentation and viva- voce. Students have exhibited a high degree of innovation, commitment and team work in executing the project work. Assessment of final year student's project must be done considering criteria such as –

- Their quality
- The state-of the-art technology used in execution
- Their relevance to industry and academics
- The use and development of theoretical and experimental methods
- The coverage of broader areas of the program.

At the end of both semesters a report is submitted by the students. Progress is continuously monitored by supervisor and an advisory committee. Midterm evaluation is done based on presentation and midterm report submission. Final evaulation is based on presentation, report submitted, examination and demonstration. The ethical values are imbibed through proper referencing.

All the POs are thus satisfied. A list of good and average projects is given below:

- Projects are taken in groups of 3-4 students.
- Students are guided by the faculty members.
- Projects are taken on a large variety of problems and many a times of multidisciplinary nature.
- Projects are both theoretical and experimental.

## Program Curriculum and Teaching –Learning Processes

**Major Project Course Objective:**

As per the ProgramCurriculum, the student has to complete project in 8th semester. The project work is inside the campus. The project work is executed under the guidance of a faculty member. Finally, the project work is assessed by external and internal examiners through presentation and viva- voce.

| S. No. | | Course Outcomes according to Bloom's cognitive Level | Level |
|---|---|---|---|
| **1** | **(CO1)** | Use fundamental knowledge and skills in software engineering and apply it effectively on a software based project. | **1** |
| **2** | **(CO2)** | Identify, formulate, research literature and analyze complex engineering problems to arrive at valid conclusions | **1** |
| **3** | **(CO3)** | Design algorithm, system, circuit, component, or process to meet desired needs with real time constraints. | **2** |
| **4** | **(CO4)** | Design of experiments, analyze and interpret data to arrive at valid conclusion | **2** |
| **5** | **(CO5)** | Apply appropriate techniques and tools in the modelling and design. | **3** |

**Mapping Course Outcomes with Program Outcomes** *Correlation Matrix* Note:

- Enter numbers 1, 2 or 3, where the correlation levels are matching
- 1. Slightly (Low), 2. Moderately (Medium), 3. Substantially (High).
- If there is no correlation, the cell is to be left blank or put -).

| Course Outcomes | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **(CO1)** | 3 | 2 | 1 | - | 1 | - | - | - | - | - | - | - |
| **(CO2)** | 2 | 2 | 1 | 2 | - | - | - | - | - | - | - | - |
| **(CO3)** | - | - | 2 | - | - | - | - | - | - | - | - | - |
| **(CO4)** | 2 | - | 2 | 1 | - | - | - | - | - | - | - | - |
| **(CO5)** | - | - | - | - | 2 | - | - | - | - | - | - | - |
| **Average** | | | | | | | | | | | | |

## ❖ Justification of CO-PO Mapping:

| | |
|---|---|
| **CO1 with PO1** | Use fundamental knowledge of mathematics and science and apply it effectively on application based project. |
| **CO1 with PO2** | Identify, formulate, research literature and analyse complex engineering problems related toproject to arrive at valid conclusions. |
| **CO1 with PO3** | Design solutions for complex problem related to project and meet the specified need for public health safety and environmental considerations. |
| **CO1 with PO5** | Create select and apply appropriate technique using modern tools including prediction and modelling of project. |
| **CO2 with PO1** | Use fundamental knowledge of mathematics and science to solve complex problem of project and arrive at a valid conclusion. |
| **CO2 with PO2** | Using Ist principle of mathematics and science to Identify, formulate, research literature and analyze complex engineering problems related to project to arrive at valid conclusions |
| **CO2 with PO3** | Identify, formulate and Design solutions for complex problem related to project and meet the specified need for public health safety and environmental considerations. |
| **CO2 with PO4** | 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. |
| **CO3 with PO3** | Design algorithm for complex engineering problems related to project and design system components or processes that meet the specified needs with appropriate consideration for the environmental considerations. |
| **CO4 with PO1** | Design of experiments, analyze and interpret data to arrive at valid conclusion Using fundamental knowledge of mathematics and science and apply it effectively on application based project. |
| **CO4 with PO3** | Developments of solution to complex problem related to project and arrive at valid conclusion. |
| **CO4 with PO4** | Conduct investigations of design of experiments, analyze complex problem. |
| **CO5 with PO5** | Create select and apply appropriate techniques and tools in the modelling and design. |

## 2.2.4. INITIATIVES RELATED TO INDUSTRY INTERACTION (10)

- **Industry supported laboratories:** Electronics and Communication Engineering Department has Centre of Excellence developed by Texas Instrument.
- **Industry involvement in the program design and Curriculum:**
  - Based on departmental Vision and Mission of the department, updating/addition of labs and modification of syllabus is being done as per the industry requirement. In consonance with addition/updating of new elective course is being done.
  - Department organized workshop sessions by expert from Texas Instrument Ltd.
  - An expert from Industry is a member of Departmental Board of Studies (BOS) who is actively associated in the designing of curriculam. The institute has MOUs with industry so as to strengthen the relationships with them of the department.
- **Industry involvement in partial delivery of any regular courses for students:**

  Electronics and Communication Engineering Department organised Workshop sessions by Expert from Texas Instrument Ltd. and these sessions also consist of Lab classes (followed by theory) under the Centre of Excellence in the Department developed by Texas Instrument as given in table below.

| Title | Offered by | Level | Duration | No of students enrolled |
|---|---|---|---|---|
| Workshop on "Mentor Graphics for VLSI Design" | Tech Lab | Sept-26$^{th}$, 2018 | One day | 32 students of 4$^{th}$ Year |
| Workshop on "Microcontroller Design using MSP430 | Texas Instrument | August 24th - 26$^{th}$, 2017 | Three day | 27 faculty and 30 students of 2nd yr |
| Workshop on "Embedded System Design" | Texas Instrument | Feb 08th - 10$^{th}$, 2016 | Three day | 32faculty and 30 students of 3rd yr |
| Faculty Development Program & Workshop on "Linear Integrated Circuits- A system Approach" | Texas Instrument | Feb 04th - 06$^{th}$, 2016 | Three day | Around 34 faculty and 42 students of 3rd yr |
| AICTE Sponsored Employability Enhancement Training Program (EETP) | Bharat Sanchar Nigam Limited (BNSL) | Jan - June, 2015 | 45 Days | 72 students of 3rd yr & 4$^{th}$ Year |

Table 2.2.4 a

- **Impact analysis of industry institute interaction and actions taken there of:**
  - Student feedback is utilized for exposure to better industries.
  - Students are exposed to real working environment in the industry.
  - Feedback from industries is conducted is also obtained from students.
  - Based on above feedback corrective action is taken to streamline the Industry trainings and visits
  - Industry Expert lectures
  - Industry projects

## 2.2.5 Initiatives related to Industry Internship/Summer Training (10)

Feedback from students about industrial visit and training is collected and impact of such interventions is assessed. Based on which corrective actions are taken. Some of which are listed below:

- Training report of the student is collected and analyzed for positive impact.
- Students are required to deliver presentation about their industrial visit and training.
- Feedback from industries where the internship is conducted is also obtained from students.
- Based on above feedback corrective action is taken to streamline the internship and training.
- Value added programs and seminars organized and participated by students

**Industrial Training:**

The student has to execute a project work preferably at industry/R&D institution. Oral assessment about the industrial exposure obtained by the students has been made in the immediate next semester.The industrial training is assessed by internal examiners through presentation and viva- voce.

**Implementation details and impact analysis:**

i. The placement cell will facilitate and monitor the student's internship program.

ii. The Department/Placement cell will strongly encourage students to undergo Internship during vacation.

iii. The student shall make a midterm presentation of the activities undertaken during the internship to a panel comprising internship guide, a senior faculty from the Department and Head of the Department.

iv. The student has to submit internship report to the Department.

v. Effectiveness of this process is analyzed through feedback from the student's through their performance in examinations/Viva-Voce, from the Alumni and Industries etc. Feedback from Industries is used for the improvement in training for further batches. Percentage of students who opted for training in government and private places and summary report of sessionwise industrial training is listed below

| Year | % of Student opted Training Place | | |
|---|---|---|---|
| | Govt | PSU | Private |
| 2018-19 | 54.5% | 35.5% | 10% |
| 2017-18 | 74.5% | 15.5% | 10% |
| 2016-17 | 64.5% | 24.5% | 10% |
| 2015-16 | 61.5% | 21.5% | 18% |

Table 2.2.5

**Feedback and Impact Analysis:**

- Effectiveness of this process is analyzed through feedback from the students, through their performance in examinations/Viva-voce, from the Alumni, from Industries etc. Feedback from Industries isused for the improvement in training for further batches.

## Summary Report of Summer Training (Industrial Training) for the Year 2017-18

| S.No | Roll No | Name of Students | Internship Completed in (Name of Industry/ Company) | Type of Institute | Discipline |
|---|---|---|---|---|---|
| 1 | 1505231001 | Abhinav Dixit | RDSO Lucknow | Govt | Signal |
| 2 | 1505231002 | Aditya Tewari | RDSO Lucknow | Govt | Telecom |
| 3 | 1505231003 | Ajaykant Chaturvedi | UP Power Transmission Corporation Limited | Govt | Electricity Transmission Division |
| 5 | 1505231005 | Amishi Singh | Bharat Electronic Limited | PSU | Electronics |
| 6 | 1505231006 | Amit Kumar | RDSO Lucknow | Govt | Signal |
| 7 | 1505231008 | Ankur Singh | Bharat Electronics Limited kotdwara | PSU | Electronics |
| 10 | 1505231011 | Ashmita Bharti | RDSO Lucknow | Govt | Signal |
| 11 | 1505231012 | Ashutosh Dwivedi | RDSO Lucknow | Govt | Signal |
| 12 | 1505231013 | Ayush Deep Singh | RDSO Lucknow | Govt | Signal |
| 13 | 1505231014 | Ayush Kumar Rai | UPPCL, Lucknow | Govt | Electricity Transmission Division |
| 14 | 1505231015 | Ayush Verma | RDSO Lucknow | Govt | Signal |
| 15 | 1505231016 | Brij Nandan Singh | RDSO Lucknow | Govt | Signal |
| 16 | 1505231017 | Chandan Jaiswal | RDSO Lucknow | Govt | Signal |
| 17 | 1505231018 | Deepak Sharma | IOCL Mathura | PSU | Instrumentation |
| 18 | 1505231019 | Deepesh Mall | Doordarshan Kendra Lucknow | Govt | Communication |
| 19 | 1505231020 | Dharmendra Chaudhary | Airport Authority of India Lucknow | Govt | CNS |
| 20 | 1505231021 | Govind Kumar | RDSO Lucknow | Govt | Signal |
| 21 | 1505231022 | Harshit Srivastava | Bharat Electronic Limited | PSU | Electronics |
| 22 | 1505231024 | Karan Kumar | Airport Authority of India Lucknow | Govt | CNS |
| 23 | 1505231025 | Kaushlendra Singh Yadav | Airport Authority of India Lucknow | Govt | CNS |
| 24 | 1505231026 | Mahima Singh Yadav | RDSO Lucknow | Govt | Signal |
| 25 | 1505231027 | Mayank Kesarwani | Doordarshan Kendra Lucknow | Govt | Communication |
| 26 | 1505231028 | Navneet Kumar | Bharat Electronic Limited | PSU | Electronics |
| 27 | 1505231029 | Palak Agarwal | TCS Lucknow | Private | Data Science |
| 28 | 1505231030 | Pawan Kumar | RDSO Lucknow | Govt | Signal |
| 29 | 1505231031 | Pranav Garg | UPPCL, Lucknow | Govt | Electronics |
| 30 | 1505231032 | Pranshu Patel | Bharat Electronic Limited | PSU | Electronics |
| 33 | 1505231036 | Saurabh Singh | NTPC Vindhyanagar | PSU | C & I |
| 34 | 1505231037 | Shailendra Chaudhary | RDSO Lucknow | Govt | Signal |
| 35 | 1505231038 | Shashikant Sahu | BHEL Varansi | PSU | Electronics |
| 36 | 1505231039 | Shivam Mishra | RDSO Lucknow | Govt | Signal |
| 38 | 1505231041 | Shretika Jain | Reliance Jio Raipur | Private | Network |
| 39 | 1505231042 | Shreya Singh | UPPCL, Lucknow | Govt | Electronics |
| 40 | 1505231043 | Shubham Yadav | S.V.V. Electro Engineering Pvt. Ltd | Private | Electrical |
| 41 | 1505231044 | Shubhi Singh | RDSO Lucknow | Govt | Signal |
| 42 | 1505231045 | Snigdha Shukla | RDSO Lucknow | Govt | Signal |

| | | | | | |
|---|---|---|---|---|---|
| 43 | 1505231046 | Sourabh Singh | RDSO Lucknow | Govt | Signal |
| 44 | 1505231047 | Sujata Gupta | Reliance Jio, Mumbai | Private | Telecommunication & Network |
| 45 | 1505231048 | Sushmita Singh | RDSO Lucknow | Govt | Signal |
| 46 | 1505231049 | Tanya Yadav | TCS Lucknow | Private | Data Science |
| 47 | 1505231050 | Vikas Swaroop | UPPCL, Lucknow | Govt | Electronics |
| 48 | 1505231051 | Viny Sharma | Bharat Electronic Limited | PSU | Electronics |
| 49 | 1505231052 | Vipul Agrawal | Bharat Electronic Limited | PSU | Electronics |
| 50 | 1505231053 | Vivek Kumar | Airport Authority of India Lucknow | Govt | CNS |
| 51 | 1605231901 | Abhigyan Pratap Singh | Northern Eastern Railway Lucknow | Govt | Data Networking System & Exchange |
| 52 | 1605231902 | Ajeet Kumar | RDSO Lucknow | Govt | Signal |
| 53 | 1605231903 | Akanksha Singh | BSNL Etawah | Govt | Telephone Exchange |
| 54 | 1605231904 | Chetan Rajput | Bharat Electronic Limited | PSU | Electronics |
| 55 | 1605231906 | Dheeraj Singh | Northern Eastern Railway Lucknow | Govt | Data Networking System & Exchange |
| 56 | 1605231907 | Noor Alam | RDSO Lucknow | Govt | Instrumentation |
| 57 | 1605231908 | Priyanshu Bajpai | RDSO Lucknow | Govt | Signal |
| 58 | 1605231910 | Savita Rajput | Northern Eastern Railway Lucknow | Govt | Data Networking System & Exchange |
| 59 | 1605231911 | Vineet Kumar | Northern Eastern Railway Lucknow | Govt | Data Networking System & Exchange |
| 60 | 1605231912 | Vivek Kumar Patel | Northern Eastern Railway Lucknow | Govt | Data Networking System & Exchange |

## Summary Report of Summer Training (Industrial Training) for the Year 2016-17

| S.No | Roll No | Name of Students | Internship Completed in (Name of Industry/ Company) | Type of Institute | Discipline |
|---|---|---|---|---|---|
| 1 | 1405213043 | SHIVAM GUPTA | RDSO lucknow | Govt | Signal |
| 2 | 1405231001 | ABHISHEK KUMAR | RDSO lucknow | Govt | Telecom |
| 3 | 1405231006 | AKANSHA VERMA | DOORDARSHAN | Govt | BROADCASTING |
| 4 | 1405231009 | AKASH VERMA | IEC | Private | Electronics |
| 5 | 1405231010 | AMAN GUPTA | RDSO lucknow | Govt | Telecom |
| 6 | 1405231011 | AMAN KUMAR SHARMA | CNC | Govt | Signal |
| 7 | 1405231012 | ANKITA ANAND | THERMAL POWER PLANT | Govt | POWER SYSTEM |
| 8 | 1405231013 | ANKUR SONI | RDSO lucknow | Govt | Telecom |
| 9 | 1405231014 | ASTHA BHASKER | BSNL | Govt | Electronics |
| 10 | 1405231015 | CHITRANSHU MISHRA | RDSO lucknow | Govt | Telecom |
| 11 | 1405231016 | DEVESH SHUKLA | RDSO lucknow | Govt | Telecom |
| 12 | 1405231017 | DHARMENDRA KUMAR SINGH | RDSO lucknow | Govt | Telecom |
| 13 | 1405231018 | DIVYANSH | RDSO lucknow | Govt | Telecom |
| 14 | 1405231019 | GAURAV SINGH | RDSO lucknow | Govt | Telecom |
| 15 | 1405231020 | KANISHK GANGWAR | NTPC | PSU | Power System |
| 16 | 1405231021 | KRISHNA KUMAR | NTPC | PSU | Power System |
| 17 | 1405231022 | LOKENDRA KUMAR | BEL | PSU | Electronics |
| 18 | 1405231023 | MANISH SACHAN | IIT Kanpur | Govt | Electronics |
| 19 | 1405231024 | MOHIT RAJ | RDSO lucknow | Govt | Telecom |

| | | | | | |
|---|---|---|---|---|---|
| 20 | 1405231025 | MONICA PANGTEY | DOORDARSHAN | Govt | BROADCASTING |
| 21 | 1405231026 | NEELANSHU VARSHNEY | RDSO lucknow | Govt | Telecom |
| 22 | 1405231027 | NEELIKA | BSNL | Govt | CNS |
| 23 | 1405231028 | NIKHIL K SINGH | PLC SCADA | Private | Instrumentation |
| 24 | 1405231030 | PRASHANT KUMAR | RDSO lucknow | Govt | Signal |
| 25 | 1405231031 | PRAVEEN SAHU | AIRCEL | Private | NetworkING |
| 26 | 1405231032 | PRIYADARSHINI DWIVEDI | LMRC | Govt | Electronics |
| 27 | 1405231033 | PRIYANK SRIVASTAVA | UPPCL | Govt | Electricity Trans Division |
| 28 | 1405231035 | RAJAN SINGH | RDSO lucknow | Govt | Signal |
| 29 | 1405231036 | RAJAT CHAWLA | TCS | Private | Programming |
| 30 | 1405231039 | SAH SWAPNIL AGRAWAL | RDSO lucknow | Govt | Signal |
| 31 | 1405231041 | SAURABH KUMAR | RDSO LUCKNOW | Govt | TELECOM |
| 32 | 1405231042 | SAURABH KUMAR | AIRCEL | Private | Networking |
| 33 | 1405231043 | SAURABH KUMAR GAUTAM | BSNL | Govt | C & I |
| 34 | 1405231044 | SHIKHA TIWARI | BSNL | Govt | Signal |
| 35 | 1405231046 | SHIVANGI GUPTA | DOORDARSHAN | Govt | BROADCASTING |
| 36 | 1405231047 | SHREYA MISHRA | Auto CAD | Private | Designing |
| 37 | 1405231048 | SHUBHAM JAIN | Airtel | Private | Data Networking System |
| 38 | 1405231050 | SHWETA KUMARI | LMRC | Govt | Electronics |
| 39 | 1405231051 | SUNIL KUMAR | RDSO lucknow | Govt | Signal |
| 40 | 1405231052 | VIDUSHI SAXENA | DOORDARSHAN | Govt | BROADCASTING |
| 41 | 1405231053 | VIJAY KUMAR YADAV | HAL | PSU | Electronics |
| 42 | 1405231054 | VISHAD SAXENA | RDSO lucknow | Govt | Signal |
| 43 | 1405231055 | YASH MISHRA | RDSO LUCKNOW | Govt | Signal |
| 44 | 1405232010 | AYUSH TRIPATHI | RDSO lucknow | Govt | Signal |
| 45 | 1405232018 | JYOTI | BSNL | Govt | Signal |
| 46 | 1405232025 | PARAS JAIN | RDSO lucknow | Govt | Signal |
| 47 | 1405232045 | SHUBHI DIXIT | HAL | PSU | Electronics |
| 48 | 1405251003 | ABHISHEK TRIVEDI | RDSO lucknow | Govt | Signal |
| 49 | 1505231901 | ANKUR CHAUDHARY | HAL | PSU | Electronics |
| 50 | 1505231902 | ANOOP KUMAR | RDSO lucknow | Govt | Telecom |
| 51 | 1505231903 | ANURAG KUMAR MAURYA | RDSO lucknow | Govt | Telecom |
| 52 | 1505231904 | DEEPAK KUMAR VERMA | RDSO lucknow | Govt | Telecom |
| 53 | 1505231905 | DIVYANSH SRIVASTAVA | Vodafone | Private | NetworkING |
| 54 | 1505231906 | IMRAN KHAN | RDSO lucknow | Govt | Telecom |
| 55 | 1505231907 | MADHURI KUMARI | AIA | Govt | CNS |
| 56 | 1505231908 | MO ASHIF ALI | RDSO lucknow | Govt | Telecom |
| 57 | 1505231909 | MOHIT JOUHARI | BSNL | Govt | Signal |
| 58 | 1505231911 | TAZEEN FATIMA | Airtel | Private | Data Networking System |
| 59 | 1505231912 | VIKASH KUMAR | robotics | Private | Programming |

**3.1. Establish the correlation between the courses and the Program Outcomes(POs) & Program Specific Outcomes(25)** (Program Outcomes and Program Specific Outcomes as defined by the Program)

| | |
|---|---|
| PO1 | **Engineering Knowledge**: Apply knowledge of mathematics and science, with fundamentals of Electronics and Communication Engineering to be able to solve complex engineering problems related to ECE. |
| PO2 | **Problem Analysis:** Identify, Formulate, review research literature and analyze complex engineering problems related to ECE and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. |
| PO3 | **Design/Development of Solutions:** Design solutions for complex engineering problems related to ECE and design system components or processes that meet the specified needs with appropriate consideration for the public health, safety, the cultural societal and environmental considerations. |
| PO4 | **Conduct Investigations of Complex Problems**: Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. |
| PO5 | **Modern Tool Usage:** Create, Select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to Electronics Engineering related complex engineering activities with an understanding of the limitations. |
| PO6 | **The Engineer and Society:** Apply Reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the ECE professional Engineering practice. |
| PO7 | **Environment and Sustainability**: Understand the impact of the ECE professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development |
| PO8 | **Ethics:** Apply Ethical Principles and commit to professional ethics and responsibilities and norms of the engineering practice. |
| PO9 | **Individual and Team Work:** Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary Settings |
| PO10 | **Communication:** Communicate effectively on complex engineering activities with the engineering community, society at large such as able to comprehend, write effective reports, design documentation, and make effective presentations. |
| PO11 | **Project Management and Finance**: Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi-disciplinary environments. |
| PO12 | **Life-Long Learning:** Recognize the need for and have the preparation and ability to engage in independent and life-long learning the broadest context of technological change. |

- **List of PSO's**

| | |
|---|---|
| **PSO1** | **An** ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI, Embedded systems, Communication Systems, Digital & Analog Devices, etc |
| **PSO2** | **An** ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions. |
| **PSO3** | **Wisdom** of social and environmental awareness along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur |

## 3.1.1Program Articulation Matrix

### Program level Course-PO matrix of all Core courses

| COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | POS1 | POS2 | POS3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1ST YEAR | | | | | | | | | | | | | | | |
| REC 201EC | 3.00 | 3.00 | 1.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 2.00 | 1.00 |
| 2nd YEAR | | | | | | | | | | | | | | | |
| 3rd SEM | | | | | | | | | | | | | | | |
| RAS 302 | 0.00 | 1.00 | 1.20 | 0.00 | 0.00 | 1.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| ROE 033 | 1.00 | 2.60 | 1.40 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| ROE 038 | 1.00 | 3.00 | 1.60 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 3.00 | 2.00 | 2.00 | 2.00 |
| REE 305 | 3.00 | 2.33 | 3.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 2.00 | 0.00 |
| REC 301 | 2.40 | 2.25 | 3.00 | 2.00 | 1.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| REC 302 | 3.00 | 2.00 | 2.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 | 1.00 |
| REC 303 | 2.08 | 2.20 | 2.03 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.17 | 2.00 | 1.80 |
| REC 351EC | 3.00 | 2.00 | 3.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.50 | 2.00 | 2.00 |
| REC 352EC | 2.80 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.33 | 2.00 |
| REC 353EC | 3.00 | 2.00 | 1.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 |
| REC 354EC | 2.80 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.33 | 2.00 |
| 4th SEM | | | | | | | | | | | | | | | |
| RCS 406 | 1.80 | 0.00 | 2.00 | 0.00 | 1.50 | 0.00 | 0.00 | 0.00 | 2.50 | 0.00 | 0.00 | 2.50 | 0.00 | 2.00 | 2.00 |
| RAS 401 | 1.00 | 3.00 | 2.40 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| RVE 401 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.60 | 3.00 | 3.00 | 2.00 | 1.00 | 0.00 | 3.00 | 0.00 | 0.00 | 2.00 |
| REC 401 | 2.20 | 1.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 3.00 | 2.20 | 2.67 | 2.00 |
| REC 402 | 3.00 | 2.20 | 1.25 | 1.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.40 | 0.00 | 0.00 |
| REC 403 | 2.20 | 1.33 | 3.00 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.67 | 1.25 | 1.00 |
| REC 451EC | 1.00 | 0.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 2.20 | 2.67 | 2.00 |
| REC 452EC | 3.00 | 2.00 | 1.50 | 2.00 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| REC 453EC | 3.00 | 2.00 | 1.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 |
| RCS 456EC | 3.00 | 2.00 | 3.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.50 | 2.00 | 2.00 |
| 3RD YEAR | | | | | | | | | | | | | | | |
| 5th SEM | | | | | | | | | | | | | | | |
| EC 501 | 3.00 | 2.00 | 1.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 502 | 3.00 | 2.33 | 2.33 | 1.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 1.00 | 2.00 | 2.20 | 1.50 |
| EC 503 | 1.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 2.00 | 2.50 | 1.00 | 0.00 |
| EC 504 | 3.00 | 2.00 | 1.00 | 2.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 1.50 | 3.00 | 2.00 | 1.50 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IC 501 | 3.00 | 2.60 | 1.25 | 1.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.20 | 0.00 | 0.00 |
| COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | POS1 | POS2 | POS3 |
| HU 501 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.25 | 0.00 | 0.00 | 1.75 | 0.00 | 2.25 | 1.75 | 3.00 | 0.00 | 1.50 |
| EC 551EC | 3.00 | 2.50 | 3.00 | 1.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 2.00 | 0.00 |
| EC 552EC | 3.00 | 2.00 | 3.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.50 | 2.00 | 2.00 |
| IC 551EC | 3.00 | 1.67 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.20 | 0.00 | 2.00 |
| EC 553EC | 3.00 | 0.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 3.00 | 2.20 | 2.67 | 2.00 |
| 6th SEM | | | | | | | | | | | | | | | |
| EC 601 | 3.00 | 2.00 | 1.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 1.00 | 2.00 | 2.00 |
| EC 602 | 3.00 | 2.33 | 2.00 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 1.00 | 2.75 | 2.00 | 1.50 |
| EC 603 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 3.00 | 0.00 | 0.00 |
| EC 011 | 2.25 | 2.50 | 3.00 | 1.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 | 1.00 |
| EC 023 | 3.00 | 2.50 | 2.50 | 2.50 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 2.00 | 2.00 |
| HU 601 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.25 | 0.00 | 0.00 | 1.75 | 0.00 | 2.25 | 1.75 | 3.00 | 0.00 | 1.50 |
| EC 651EC | 2.40 | 2.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 1.60 | 2.00 | 2.00 |
| EC 652EC | 3.00 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 1.67 | 2.00 | 2.33 | 2.00 |
| EC 653EC | 2.80 | 2.00 | 2.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 | 2.00 | 1.00 | 2.33 | 2.00 |
| EC 654EC | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 |
| 7th SEM | | | | | | | | | | | | | | | |
| OE 072 | 3.00 | 2.40 | 2.00 | 0.00 | 1.67 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 021 | 2.80 | 2.33 | 2.00 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 1.00 | 3.00 | 2.00 | 1.50 |
| EC 701 | 3.00 | 2.40 | 2.00 | 0.00 | 1.67 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 702 | 3.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 |
| EC 703 | 3.00 | 0.00 | 2.00 | 2.50 | 2.00 | 0.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 | 2.25 |
| EC 751EC | 3.00 | 2.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 | 2.00 |
| EC 752EC | 2.60 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.00 | 2.00 | 2.00 | 2.00 |
| EC 753EC | 0.00 | 0.00 | 2.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 3.00 | 2.00 | 0.00 | 2.00 | 2.40 | 0.00 | 0.00 |
| EC 754EC | 2.33 | 2.00 | 1.50 | 1.50 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 | 1.50 | 2.00 |
| 8th SEM | | | | | | | | | | | | | | | |
| OE 081 | 3.00 | 2.40 | 2.00 | 0.00 | 1.67 | 1.00 | 0.00 | 0.00 | 0.00 | 1.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 031 | 3.00 | 2.00 | 0.00 | 0.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 801 | 3.00 | 2.00 | 1.00 | 2.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 802 | 3.00 | 2.00 | 1.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.00 | 0.00 | 2.00 | 1.00 | 2.00 | 2.00 |
| EC 851EC | 2.33 | 2.00 | 1.50 | 1.50 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.50 | 1.50 | 2.00 |
| Average | 2.62 | 2.13 | 1.92 | 1.65 | 2.07 | 1.18 | 3.00 | 3.00 | 1.94 | 1.78 | 2.06 | 1.90 | 2.00 | 2.04 | 1.86 |

Table 3.1a Programlevel Course - PO matrix

### 3.1.2 Course Articulation Matrix with PO

| Outcomes | 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 | PSO 3 | Course outcome Statement |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course Code | 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 | PSO 3 | REC 101 Basic Electronics |
| REC101.CO1 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - | Understand the circuits and configuration of basic electronic devices, diode in rectifiers, filter circuit and wave shaping circuit. |
| REC101.CO2 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - | Understand the concept of Transistor & FET by going through their operation and Characteristic. |
| REC101.CO3 | 3 | 3 | 1 | 3 | - | 1 | - | - | - | - | - | - | 3 | 2 | - | Using Op-Amp practically, its ideal characteristic,input offsetvoltage, Output offset voltage, Input biased current, and Input offset current. Design inverting and non-inverting , Adder, Integrator & Differentiator using OPAMPs |
| REC101.CO4 | 1 | 3 | 1 | 3 | - | - | - | - | - | - | - | - | - | - | 1 | Illustrate the basic electronic Instruments and their measurements (Digital Multimeter, Oscilloscope) and application of Oscilloscope. |
| REC101.CO5 | 1 | 3 | 1 | - | - | - | - | - | - | - | - | - | - | - | 1 | Understand the functioning of a Communication system and different modulation technique. Applying the fundamentals of Communication Engineering. |
| Outcomes | 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 | PSO 3 | REC301 Digital Logic Design |
| REC301.CO1 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | 1 | 2 | - | - | Basic knowledge of number system and its arithmetic operation and uses of basic gates. |
| REC301.CO2 | 2 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | Students are going to understand the uses of basic gates in Combinational Logic Circuit |
| REC301.CO3 | 2 | 2 | 1 | - | 1 | - | - | - | - | - | - | 2 | - | 2 | - | Students are going to understand the uses of Combinational Logic Circuit to implement Sequential Logic And Its Applications |
| REC301.CO4 | 2 | 2 | 1 | - | 1 | - | - | - | - | - | - | 2 | - | 2 | - | Students are going to understand Synchronous & Asynchronous Sequential Digital Circuits. |
| REC301.CO5 | 3 | 3 | 3 | 2 | 3 | - | - | - | - | - | - | 3 | - | 2 | 2 | Students are going to understand the Memory & Programmable Logic Devices |

COURSE OUTCOMES AND PROGRAM OUTCOMES

| Outcomes | 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 | PSO 3 | REC 303 Signals and Systems |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REC303.CO1 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - | Classify the signals as Continuous time and Discrete time |
| REC303.CO2 | 3 | 3 | 1 | - | - | - | - | - | - | - | - | - | 2 | - | - | Apply transform techniques to analyze continuous-time and discrete-time signals and systems. |
| REC303.CO3 | 3 | 3 | 1 | - | - | - | - | - | - | - | - | 1 | - | 2 | - | Analyze the spectral characteristics of signals using Fourier analysis. |
| REC303.CO4 | 3 | 3 | 1 | - | - | - | - | - | - | - | - | 1 | 2 | 2 | - | Understand frequency-domain representation and analysis concepts using Laplace transform, Z-transform |
| REC303.CO5 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | - | 2 | 1 | 1 | Develop mathematical and computational skills needed in application areas like sampling, communication, signal processing and control. |
| Outcomes | 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 | PSO 3 | REC402 Electromagnetic Field Theory |
| REC402. CO1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - | Explain the different co-ordinate system and able to use the mathematical tools related to electromagnetic fields. |
| REC402.CO2 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | - | Interpret the knowledge of Electrostatic fields , Electric potential, Electrostatic energy and also able to apply boundary conditions. |
| REC402.CO3 | 3 | 3 | 1 | 2 | - | - | - | - | - | - | - | - | 2 | - | - | Develop the concepts of magnetic field, magnetic flux density, magnetic scalar and vector potential and also apply boundary condition. |
| REC402.CO4 | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | - | 2 | - | - | Analyze the Maxwell equation and also develop the concepts of induced EMF. |
| REC402.CO5 | 3 | 2 | 2 | 1 | - | - |  | - | - | - | - | - | 2 | - | - | Derive Electromagnetic wave propagation equation and also able to apply poynting theorem for the calculation of power associated with EM wave. |
| Outcomes | 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 | PSO 3 | EC501 Integrated Circuits |
| EC501.CO1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | 2 | Students will be able to gain in-depth knowledge of analog IC design and a complete analysis of 741-IC Op-Amp. |
| EC501.CO2 | 3 | 2 | 1 | - | 2 | - | - | - | - | - | - | - | - | 2 | - | Students will acquire knowledge about Op-Amp based circuits and basic components of ICs such as various types of filters. |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC501.CO3 | 3 | 2 | 1 | - | 2 | - | - | - | - | - | - | 2 | 1 | 2 | - | Students will learn about CMOS digital integrated circuits and digital memory circuits. |
| EC501.CO4 | 3 | 2 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | - | Students will be able to understand the concept of Op-Amp based non-linear and wave-shaping circuits. |
| EC501.CO5 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - | - | Students will gain knowledge about the working principle of data converters along with application specific ICs such as 555 timer and PLL. |
| Outcomes | 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 | PSO 3 | EC502 Principles of Communication |
| EC 502.CO1 | 3 | 1 | 1 | - | - | - | - | - | - | 2 | - | 1 | 3 | 1 | - | Students will be able to understand the concept of communication system and the need for linear modulation techniques and its types |
| EC 502.CO2 | 3 | 2 | 1 | 1 | - | - | - | - | - | - | - | - | 2 | 3 | - | Students will be demonstrated the theoretical background of angle modulation schemes, both modulation and demodulation |
| EC 502.CO3 | 1 | 2 | 3 | 1 | - | - | - | - | - | - | - | - | 1 | 2 | | Students will learn about important techniques like PAM, sampling theorem and various multiplexing schemes involved in any communication system |
| EC 502.CO4 | 2 | 3 | 2 | 1 | - | - | - | - | - | - | - | 1 | | 2 | 1 | Students will learn about various digital modulation techniques like PCM, delta modulation alongside with the basic concepts regarding the linear filtering of noise. |
| EC 502.CO5 | 3 | 2 | 2 | 2 | 2 | | | | | | 2 | | | 3 | 2 | Students will learn about the concept of signal to noise ratio, FM and basic building of PLL. |
| Outcomes | 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 | PSO 3 | EC601 Microwave Engineering |
| EC601.CO1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 1 | 2 | - | Understand the concept of Rectangular Wave Guide, Circular Waveguides and their Field Components, TE, TM Modes Micro-strip Transmission line (TL), Coupled TL, Strip TL, Coupled Strip Line ,Coplanar TL, Microwave Cavities |
| EC601.CO2 | 3 | 2 | 1 | - | 2 | - | - | - | - | - | - | - | - | - | - | Analyze the Scattering Matrix, Passive microwave devices, Directional Couplers, S parameter analysis of all components. |
| EC601.CO3 | 3 | 1 | 1 | 2 | 2 | - | - | - | - | - | - | - | 1 | - | 2 | Application of the performance of specialized microwave tubes such as klystron, reflex klystron, magnetron and |

| | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | Travelling wave tube. |
| EC601.CO4 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | - | Synthesis of Solid state amplifiers and oscillatorsAvalanche Transit –time devices: IMPATT Diode, TRAPPAT Diode. |
| EC601.CO5 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | 1 | - | - | 2 | Test microwave components and circuits with standard microwave bench and vector network analyzer. |
| Outcomes | 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 | PSO 3 | EC602 Digital Communications |
| EC602.CO1 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | 1 | 3 | - | 1 | System approach to Digital communication right at the foundation level and different techniques used to design the transmitter in digital communication system. |
| EC602.CO2 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 3 | - | 2 | Application of probability theory and random variables in communication system |
| EC602.CO3 | 3 | 3 | 1 | 2 | - | - | - | - | - | - | - | - | 2 | - | 1 | Compare different detection schemes by calculating BER |
| EC602.CO4 | 3 | 2 | 2 | - | - | - | - | - | - | - | - | - | - | - | 2 | Design different spread spectrum communication systems for multiuser detection. |
| EC602.CO5 | 3 | 1 | 2 | - | - | - | | - | - | 2 | - | 1 | 3 | 2 | - | Find out errors in data transmission and also able to correct them by different error detection & correction techniques. |
| Outcomes | 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 | PSO 3 | EC701 Optical Communication |
| EC701.CO1 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | 1 | - | 2 | Familiarity with basic concepts and theory of Optical Communication |
| EC701.CO2 | 3 | 3 | 1 | - | 1 | - | - | - | - | - | - | - | - | 2 | - | Ability to demonstrate OPCOMM components, assemble them and solve problems on Optical Communication system |
| EC701.CO3 | 3 | 3 | 2 | - | 2 | - | - | - | - | 1 | - | 2 | 1 | 2 | - | Ability to design, implements, analyzes and maintains optical communication system |
| EC701.CO4 | 3 | 2 | 1 | - | - | - | - | - | - | - | - | - | - | - | - | Knowledge of different source of light as well as receiver nd their comparative study |
| EC701.CO5 | 3 | 2 | 2 | - | 2 | - | - | - | - | - | - | - | - | - | - | To get idea about power budget and ultimately be an engineer with adequate knowledge in optical domain |

COURSE OUTCOMES AND PROGRAM OUTCOMES

| Outcomes | 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 | PSO 3 | EC703 VLSI Design |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC703.CO1 | 3 | 1 | 1 | - | 2 | - | - | - | - | - | - | - | 3 | - | 2 | Describe and apply fundamentals basic VLSI design technologies and Scaling and small scale geometry effects. |
| EC703.CO2 | 1 | 2 | 2 | - | - | - | - | - | - | - | - | - | 3 | 3 | 2 | Demonstrate MOS Inverters like Resistive Load and CMOS Inverter and its switching Characteristics. |
| EC703.CO3 | 1 | 2 | 1 | 2 | - | - | - | - | 3 | - | - | - | - | 3 | | Solve Combinational and Sequential MOS Logics and SR latch circuits, clocked latch and FF circuits, CMOS D latch and edge triggered FF. |
| EC703.CO4 | 1 | 1 | 3 | 3 | - | - | - | - | - | - | - | - | - | - | 2 | Classify and explain pass transistors and Semiconductor memories. |
| EC703.CO5 | 1 | 1 | 3 | - | 3 | - | - | - | - | - | - | 3 | - | - | 3 | Summarize MOS concepts and invent Low – Power CMOS Logic Circuits and assemble the knowledge for testing of design. |
| Outcomes | 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 | PSO 3 | EC801 Mobile and Wireless Communication |
| EC801.CO1 | 3 | 2 | 2 | 1 | - | - | - | - | - | - | - | - | 1 | - | 2 | To make students familiar with various generations of mobile communications.. |
| EC801.CO2 | 3 | 2 | 1 | - | 2 | - | - | - | - | - | - | - | - | 2 | - | To know application of the Equalizers in communication receiver, Survey of equalization techniques, Diversity techniques, RAKE receiver |
| EC801.CO3 | 3 | 1 | 1 | - | - | - | - | - | - | - | - | 2 | - | 2 | - | Analyse the concept of cellular communication |
| EC801.CO4 | 3 | 1 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | Synthesis of GSM mobile communication standard, its architecture, logical channels, advantages and limitations. Knowledge of IS-95 CDMA mobile communication standard, its architecture, logical channels, advantages and limitations. |
| EC801.CO5 | 3 | 2 | 1 | 2 | - | - | - | - | - | - | - | - | - | - | 2 | Evaluation of Adhoc Networks, Mobile data networks, wireless standards IMT2000, Introduction to 4G and concept of NGN |

Table 3.1.1b

### 3.2. Attainment of Course Outcomes (75)

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

The key aspects in Outcome-Based Education (OBE) are the assessment of course outcomes. At the initial stage of OBE implementation, the Course Outcomes (CO's) for each course are defined based on the Programme Outcome (PO's) and other requirements. At the end of each course, the COs needs to be assessed and evaluated, to check whether it has been attained or not. Assessment is one or more processes, carried out by the department, that identify, collect, and prepare data to evaluate the achievement of Programme Educational Objectives and Programme Outcomes. Attainment is the action or fact of achieving a standard result towards accomplishment of desired goals. Attainment of the CO's can be measured directly or indirectly.

Direct attainment basically displays the knowledge and skills of the students from their performance. It can be determined from the performance of the students in all the relevant assessment instruments – like internal assessments, assignments, quiz and end semester examination (ESE). These methods provide a sample of what students know and/or can do and provide strong evidence of student learning. Indirect methods such as surveys and interviews ask the stakeholders to reflect on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills. Indirect measures can provide information about graduate's perception of their learning and how this learning is valued by different stakeholders.

**(A) Internal Tests/Exams:**

- The Internal Assessment marks in theory papers shall be based on two tests generally conducted twice in each semester as per the academic calendar stipulated by the Institute.
- There shall be a maximum of 30/15 Internal Assessment Marks in each theory subjects.
- Question papers for the corresponding course will be prepared by the respective course faculty and will be submitted to the Internal Test Coordinator well in advance.
- Student's performance in the Class Test (Mid Semester) is evaluated as per the scheme and solution prepared by the corresponding course faculty.

- The Test Coordination team consists of following faculties:

| Faculty Name | Designation |
|---|---|
| Dr.Rajiv Kumar Singh | Assistant Professor |

**(B) Laboratory Exam Evaluation:**

- The Internal Assessment marks shall be based on the laboratory reports and practical test.
- The laboratory in-charge will conduct the practical test.
- There shall be a maximum of 50/20 Internal Assessment Marks in each practical paper
- The evaluation procedure for laboratory courses are done by the laboratory In-Charge(s) based on the following parameters which are divided into three components:

  Continuous Assessment : 10marks,
  Record : 5 marks
  Internal Test : 5 marks

**(C) Seminar Work Evaluation:**

- One seminar will be conducted per student in the third year 6th semester by a committee consisting of the Head of the Department and faculty member of the department whom shall be the Seminar Coordinator(s).
- Seminar topic shall be selected from the emerging technical areas.The Seminar presentation and evaluation committee members are as

| **Faculty Name** | **Designation** |
|---|---|
| Dr. V. K Singh (Coordinator) | Professor |
| Dr. Rajiv Kumar Singh | Assistant Professor |
| Seminar Guide | Faculty |

The Internal Assessment marks are given based on the evaluation done by the committee members (Head of the Department and Seminar Coordinator) along with the guide and reviewer as follows:

| Component | Marks | Criteria |
|---|---|---|
| Presentation | 10 | Clarity in presentation |
| | 10 | Understanding concepts |
| | 15 | Answering queries |
| | 05 | Organizing the presentation |
| Technical Seminar Report | 10 | Completeness of the report |

**(D) Project Work Evaluation:**

- Project work in $7^{th}$&$8^{th}$ semester shall be completed batch wise, each batch consisting of a maximum of four candidates.
- The Project Coordinator(s) give the instructions to the students by the end of 7th semester (Minor Project) and $8^{th}$ semester project batches are formed among the student. The Project Coordination team consists of the following faculty members as follows:

| Faculty Name | Designation |
|---|---|
| Dr. RCS Chauhan (Project Coordinator) | Associate Professor |
| Dr. Rajiv Kumar Singh | Assistant Professor |
| Project Guide | Faculty |

- Based on the area of specialization and competency skills of the faculties, project coordinator(s) will allocate the batches to the internal guides.
- The internal guide will continuously guide and monitor the students on weekly basis and get the updates of the works done by their corresponding batch of students
- Students will submit the synopsis of their project to the project coordinator(s) for scrutinizing.
- By the end of 7th semester review will be conducted to the students in order to approve and finalize the selected topic.

- Three project reviews will be conducted by the corresponding internal guide along with project coordinator(s) based on a schedule

| S.No | Review | Scheduled Dates |
|---|---|---|
| 1 | 1st Review | Feb 22nd– 25th, 2018 |
| 2 | 2nd Review | March 21st– 25th, 2018 |
| 3 | Final Review | April 7th– 12th, 2018 |

- The Internal Assessment marks in case of project shall be based on the evaluation at the end of 8th semester by the committee consisting of Head of the Department, Project Coordinator(s) and project guide.
- The Internal Assessment marks will be submitted to the department once the evaluation is done.
- Viva-voce examination in project work shall be conducted batch-wise by the panel of members assigned by the Board of Studies (BOS). Based on the performance of the students, the external viva voce marks are awarded.
- The department encourages the students to showcase their skills by publishing papers in conferences/journals forum and participating in technical paper presentations.

## PROCESS FOR SEMINAR EVALUATION (RUBRICS)

### SELECTION OF GUIDE:

- Firstly students are listed alphabetically.
- Guide is allotted to individual students alphabetically.
- In this way, guide allotment to the respective students is done and notified to all simultaneously.

### EVALUATION CRITERIA (MARKS DISTRIBUTION):

- **SEMINAR** is of 50 marks, marks out of 30 are given by the faculty (guide) based on weekly assessment and marks out of 20 are given on the basis of Report writing and PPT presentation in the presence of internal departmental evaluation committee members.
- Evaluation of marks out of 20 is based on following criteria:
    - Selection of topic
    - Depth knowledge of the topic
    - Presentation by the student

### SELECTION OF TOPIC:

- All students are notified that they have to report to their respective guide weekly and have to prepare weekly report also.
- The students are informed that their seminar topic is based on some technical aspects.
- All students are notified that they have to give presentation in the presence of departmental committee members.

## PROCESS FOR INDUSTRIAL INTERACTION EVALUATION

### SELECTION OF INDUSTRY FOR TRAINING:

- Students are advised to search about different industries of their interest.
- Based on their choice, letters are given to the respective student by the Training and placement Department of the institute..
- The students are supposed to underwent this training (4 to 6 week) after $6^{th}$ semester within the specified time

### EVALUATION CRITERIA (MARKS DISTRIBUTION):

- The **Industrial Training Viva** is of 50 marks.
- Evaluation of marks out of 20 is based on following criteria:
    - Selection of industry based on the research and development
    - Depth knowledge of the technology learned during training
    - Presentation by the student

**NOTIFICATION OF PRESENTATION:**

- The students are notified to give their **PPT** presentation depending upon the work which they have learned in the industry, in the presence of internal departmental evaluation committee members.
- Students have to attach their duly signed certificate (provided by the industry) in their report file.

## PROCESS FOR FINAL YEAR PROJECT (RUBRICS)

**GROUP FORMATION:**

- Students are notified to divide themselves in the batch of 3-4 in number.

**NUMBER OF GROUPS:**

- Since the intake of the respective batch is 60, so the total number of students is thus divided into around 20 groups approx.

**SELECTION OF GUIDE:**

- Students of individual groups are given choice to choose their guide among faculty members of the department and they can also choose co-guide from other departments according to their domain of project.
- Each groups are shortlisted based on their merit for guide allotment by the department.
- Guide allotment is based on the maximum percentage obtained by the individual students among each group.
- Maximum two groups are assigned to individual faculty member in the department.
- The group number is assigned alphabetically.
- The team leader of each group is assigned according to the merit.
- In this way, guide allotment to the respective group of students is done and notified to all students simultaneously.

## EVALUATION CRITERIA (MARKS DISTRIBUTION):

- Final year project is mainly divided into **minor and major**; Minor project is carried out by the students in VII semester while Major project is carried out in VIII semester.
- MINOR project is of 50 marks, marks out of 30 are given by the faculty (guide) based on weekly assessment and marks out of 20 are given on the basis of presentation in the presence of departmental committee members.
- MAJOR project is of 350 marks, marks out of 250 are given by the External examination (ESE) and out of remaining 100 marks, marks out of 65 are given by faculty (internal guide) based on weekly assessment and marks out of 35 are given on the basis of monthly presentation by the students in the presence of departmental committee members.

## MINOR PROJECT:

- All students are notified that they have to report to their respective guide weekly and have to prepare weekly report also.
- The students are informed that their minor project can be extended as major project based on nature of project, either on hardware or software, or both if interested.
- All students are notified that they have to give monthly presentation based on the progress of the project.

## MAJOR PROJECT:

- All students are notified that they have to report to their respective guide weekly and have to prepare weekly report also.
- All students are notified that they have to give monthly presentation based on the progress of the project.

## BEST PROJECT:

- Selection of best project is based on the total maximum marks (internal and external) given among the various project groups.

## APPROVAL :

- The whole process has been approved in the Board of Studies.

**3.2.2. Record the attainment of Course Outcomes of all courses with respect to set attainment levels (65)** *Program shall set Course Outcome attainment levels for all courses.*

**CO Assessment Methodology and Tools**

| Assessment tool | Who will do it |
|---|---|
| End of course survey | Faculty |
| Student Feedback & Comments | |
| Rubrics (PO Specific) | Faculty |
| Faculty Evaluation reports | Faculty |
| Internal assessment and Home assignments | Faculty |
| Semester End performance report | Faculty |
| End of the Semester Examinations | Faculty |
| Projects | Faculty |
| Assignments | Faculty |
| Faculty assessment | HOD |
| Department performance report | Program Assessment & Quality Improvement Committee (PAQIC) |

**Direct Assessment Methods:** For some of the POs, rubrics has been designed using performance indicators and shared with the students. This helps students to understand, against which parameter their work will be judged with the "scoring rules".

**Assignment/Quiz/Class Test:** The assignments, Quiz and class tests arequalitative performance assessment tools designed to assess student's knowledge of engineering practices, framework and problem solving. An analytic rubric was developed to assess student's knowledge with respect to the learning outcomes associated with the scenario tool.Two class tests are designed to test the knowledge of the student.

**End Semester Exams:** End semester examinations (theory + practical) are metric for assessing whether all the POs are attained or not. Examination is more focused on attainment of course outcomes and program outcomes.

**Lab Practical:** This will assess student's practical knowledge with their designing capabilities.

**Measuring CO attainment through External Assessments:** Measuring Course Outcomes attained through Semester End Examinations (SEE) and Direct External Evaluation process with CO target may be stated in terms of percentage of students getting more than the average marks or more as selected by the Program in the End Semester Examination.

Example related to attainment levels Vs. targets: (The examples indicatedare for reference only. Program may appropriately define levels)

- Attainment is measured in terms of actual percentage of students getting set percentage of marks.
- If target sare achieved then all the course outcomes are attained for that year. Program is expected to set higher targets for the following years as a part of continuous improvement.
- If targets are not achieved, the program should put in place an action plan to attain the target in sub sequent years.

| | | Electronics & Communication Engineering, Institute of Engineering & Technology, Lucknow | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Course | EC 703 | Subject Name | VLSI Design | | | | | | | | | | |
| No of Student | | 58 | Q 1 | Q2 | Q3 | Q4 | Q5 | Total | Outcome | Outcome | Outcome | Outcome | Outcome | Outcome | |
| S.No. | Roll No. | Name | CO1 | CO2 | CO3 | CO4 | CO5 | Marks | Total_A | CO1_A | C02_A | CO3_A | CO4_A | CO5_A | Total COs attaint |
| | | Maximum Marks -100 | 20 | 20 | 20 | 20 | 20 | 100 | 44 | 7 | 10 | 11 | 7 | 9 | 44 |
| 1 | 1405213043 | SHIVAM GUPTA | 3 | 12 | 16 | 6 | 12 | 49 | 1 | 0 | 1 | 1 | 0 | 1 | 3 |
| 2 | 1405231001 | ABHISHEK KUMAR | 4 | 2 | 6 | 5 | 5 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 1405231006 | AKANSHA VERMA | 6 | 13 | 10 | 0 | 9 | 38 | 0 | 0 | 1 | 0 | 0 | 1 | 2 |
| 4 | 1405231009 | AKASH VERMA | 9 | 5 | 4.5 | 8 | 11 | 38 | 0 | 1 | 0 | 0 | 1 | 1 | 3 |
| 5 | 1405231010 | AMAN GUPTA | 6 | 0 | 6.5 | 8 | 9 | 30 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 6 | 1405231011 | AMAN KUMAR SHARMA | 8 | 7 | 5.5 | 4 | 8 | 33 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 7 | 1405231012 | ANKITA ANAND | 7 | 12 | 11 | 10 | 5 | 45 | 1 | 1 | 1 | 1 | 1 | 0 | 4 |
| 8 | 1405231013 | ANKUR SONI | 6 | 8 | 8 | 6 | 6 | 34 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 1405231014 | ASTHA BHASKER | 12 | 6 | 14 | 6 | 4 | 42 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1405231015 | CHITRANSHU MISHRA | 6.5 | 4.5 | 8 | 6 | 10 | 35 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 11 | 1405231016 | DEVESH SHUKLA | 2 | 8 | 11 | 3 | 7 | 31 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 12 | 1405231017 | DHARMENDRA KUMAR SINGH | 11 | 7 | 8 | 4 | 5 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 13 | 1405231018 | DIVYANSH | 11 | 15 | 13 | 1 | 14 | 54 | 1 | 1 | 1 | 1 | 0 | 1 | 4 |
| 14 | 1405231019 | GAURAV SINGH | 3 | 13 | 12 | 10 | 9 | 47 | 1 | 0 | 1 | 1 | 1 | 1 | 4 |
| 15 | 1405231020 | KANISHK GANGWAR | 9 | 16 | 9 | 11 | 8 | 53 | 1 | 1 | 1 | 0 | 1 | 0 | 3 |
| 16 | 1405231021 | KRISHNA KUMAR | 8 | 13 | 14 | 10 | 11 | 56 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 17 | 1405231022 | LOKENDRA KUMAR | 8 | 7 | 15 | 4 | 9 | 43 | 1 | 1 | 0 | 1 | 0 | 1 | 3 |
| 18 | 1405231023 | MANISH SACHAN | 1 | 14 | 15 | 0 | 15 | 45 | 1 | 0 | 1 | 1 | 0 | 1 | 3 |
| 19 | 1405231024 | MOHIT RAJ | 8 | 10 | 15 | 10 | 12 | 55 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 20 | 1405231025 | MONICA PANGTEY | 7 | 9.5 | 8 | 0 | 10 | 35 | 0 | 1 | 0 | 0 | 0 | 1 | 2 |
| 21 | 1405231026 | NEELANSHU VARSHNEY | 10 | 7 | 9 | 6 | 8 | 40 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 22 | 1405231027 | NEELIKA | 10 | 9 | 6 | 5 | 5 | 35 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 23 | 1405231028 | NIKHIL K SINGH | 12 | 10 | 9 | 12 | 11 | 54 | 1 | 1 | 1 | 0 | 1 | 1 | 4 |
| 24 | 1405231030 | PRASHANT KUMAR | 6 | 12 | 10 | 11 | 7 | 46 | 1 | 0 | 1 | 0 | 1 | 0 | 2 |
| 25 | 1405231031 | PRAVEEN SAHU | 4 | 4 | 17 | 6 | 7 | 38 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 26 | 1405231032 | PRIYADARSHINI DWIVEDI | 3 | 3 | 4.5 | 6 | 1 | 18 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 27 | 1405231033 | PRIYANK SRIVASTAVA | 12 | 18 | 16 | 14 | 16 | 76 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 28 | 1405231035 | RAJAN SINGH | 4 | 13 | 10 | 4 | 12 | 43 | 1 | 0 | 1 | 0 | 0 | 1 | 2 |
| 29 | 1405231036 | RAJAT CHAWLA | 4 | 8 | 5.5 | 5 | 9 | 32 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| 30 | 1405231039 | SAH SWAPNIL AGRAWAL | 4 | 6 | 13 | 16 | 15 | 54 | 1 | 0 | 0 | 1 | 1 | 1 | 3 |
| 31 | 1405231041 | SAURABH KUMAR | 9 | 7 | 14 | 8 | 6 | 44 | 1 | 1 | 0 | 1 | 1 | 0 | 3 |
| 32 | 1405231042 | SAURABH KUMAR | 6 | 10 | 13 | 0 | 7 | 36 | 0 | 0 | 1 | 1 | 0 | 0 | 2 |
| 33 | 1405231043 | SAURABH KUMAR GAUTAM | 7 | 13 | 10 | 7 | 6 | 43 | 1 | 1 | 1 | 0 | 1 | 0 | 3 |
| 34 | 1405231044 | SHIKHA TIWARI | 0 | 13 | 14 | 12 | 7 | 46 | 1 | 0 | 1 | 1 | 1 | 0 | 3 |
| 35 | 1405231046 | SHIVANGI GUPTA | 6 | 4 | 12 | 6 | 6 | 34 | 0 | 0 | 0 | 1 | 0 | 0 | 1 |
| 36 | 1405231047 | SHREYA MISHRA | 12 | 10 | 8 | 13 | 11 | 54 | 1 | 1 | 1 | 0 | 1 | 1 | 4 |
| 37 | 1405231048 | SHUBHAM JAIN | 8 | 12 | 12 | 5 | 3 | 40 | 0 | 1 | 1 | 1 | 0 | 0 | 3 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38 | 1405231050 | SHWETA KUMARI | 10 | 18 | 19 | 11 | 12 | 70 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 39 | 1405231051 | SUNIL KUMAR | 7 | 5 | 10 | 8.5 | 6 | 37 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 40 | 1405231052 | VIDUSHI SAXENA | 11 | 13 | 12 | 7 | 10 | 53 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 41 | 1405231053 | VIJAY KUMAR YADAV | 8 | 15 | 15 | 7 | 6 | 51 | 1 | 1 | 1 | 1 | 1 | 0 | 4 |
| 42 | 1405231054 | VISHAD SAXENA | 14 | 18 | 17 | 7 | 11 | 67 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 43 | 1405231055 | YASH MISHRA | 6 | 6 | 8 | 7 | 8 | 35 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| 44 | 1405232010 | AYUSH TRIPATHI | 8 | 15 | 10 | 14 | 10 | 57 | 1 | 1 | 1 | 0 | 1 | 1 | 4 |
| 45 | 1405232018 | JYOTI | 6 | 11 | 11 | 8 | 8 | 44 | 1 | 0 | 1 | 1 | 1 | 0 | 3 |
| 46 | 1405232025 | PARAS JAIN | 11 | 12 | 14 | 10 | 14 | 61 | 1 | 1 | 1 | 1 | 1 | 1 | 5 |
| 47 | 1405232045 | SHUBHI DIXIT | 7 | 4 | 12 | 10 | 7 | 40 | 0 | 1 | 0 | 1 | 1 | 0 | 3 |
| 48 | 1405251003 | ABHISHEK TRIVEDI | 15 | 15 | 9 | 15 | 9 | 63 | 1 | 1 | 1 | 0 | 1 | 1 | 4 |
| 49 | 1505231902 | ANOOP KUMAR | 6 | 13 | 13 | 9 | 8 | 49 | 1 | 0 | 1 | 1 | 1 | 0 | 3 |
| 50 | 1505231903 | ANURAG KUMAR MAURYA | 3 | 16 | 11 | 10 | 8 | 48 | 1 | 0 | 1 | 1 | 1 | 0 | 3 |
| 51 | 1505231904 | DEEPAK KUMAR VERMA | 9 | 5 | 11 | 7 | 7 | 39 | 0 | 1 | 0 | 0 | 1 | 0 | 2 |
| 52 | 1505231905 | DIVYANSH SRIVASTAVA | 7 | 18 | 14 | 1 | 11 | 51 | 1 | 1 | 1 | 1 | 0 | 1 | 4 |
| 53 | 1505231906 | IMRAN KHAN | 6.5 | 7.5 | 7 | 1.5 | 7 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 54 | 1505231907 | MADHURI KUMARI | 7 | 6 | 12 | 0 | 9 | 34 | 0 | 1 | 0 | 1 | 0 | 1 | 3 |
| 55 | 1505231908 | MO ASHIF ALI | 4 | 6 | 7.5 | 8 | 9 | 35 | 0 | 0 | 0 | 0 | 1 | 1 | 2 |
| 56 | 1505231909 | MOHIT JOUHARI | 8 | 3 | 9 | 6 | 5 | 31 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| 57 | 1505231911 | TAZEEN FATIMA | 7 | 14 | 10 | 10 | 8 | 49 | 1 | 1 | 1 | 0 | 1 | 0 | 3 |
| 58 | 1505231912 | VIKASH KUMAR | 9 | 9.5 | 9 | 2 | 7 | 37 | 0 | 1 | 0 | 0 | 0 | 0 | 1 |
| Total | | | 422.0 | 571.0 | 630 | 407.0 | 496 | 2534 | 30.0 | 34.0 | 30.0 | 28.0 | 31.0 | 27.0 | 150.0 |
| Average | | | 7.3 | 9.8 | 10.9 | 7.0 | 8.6 | 43.7 | 0.5 | 0.6 | 0.5 | 0.5 | 0.5 | 0.5 | 2.6 |
| % of CO | | | | | | | | | | 58.6 | 51.7 | 48.28 | 53.45 | 46.6 | 51.72 |

Table 3.2.2.a

**Measuring CO attainment through Internal Assessments:** (The examples indicated are for reference only. Program may appropriately define levels) Target may be stated interms of percentage of students getting more than class average marks or set by the program in each of the associated Cos in the assessment instruments (mid term tests, assignments, miniprojects, reports and presentations etc. as mapped with the COs):

- Attainmentismeasuredintermsofactualpercentageofstudentsgettingsetpercentage ofmarks.
- Iftargetsareachievedthenthecourse outcomes areattainedforthatyear.Programis expected to set higher targets for the following years as a part of continuous improvement.
- Iftargetsarenotachievedtheprogramshouldputinplaceanactionplantoattainthe targetinsubsequentyears.

**Measuring Course Outcomes attained through Direct Internal evaluation process Cumulative Internal Examinations (CIE) with CO**

| Course | | Bachelor of Technology (B.Tech) - Electronics and Communication Engineering | | | | | | | Semester | | | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Course | | EC 703 | Subject Name | | VLSI Design | | | | | | | |
| No of Student | | 58 | CT1 | CT12 | CT Total | Attain | Attain | Quiz/ Atten | Assignment | Attain | Attain | TOTAL |
| S.No. | Roll No. | Name | CO1,CO2 | CO3, CO4,CO5 | CO Total | CO1 & CO2 | CO3, CO4 & CO5 | CO Quiz | CO Assign | CO Quiz Attain | CO Assign Attain | TOTAL |
| | | Maximum Marks 50 | 15 | 15 | 30 | 8.00 | 9.00 | 10 | 10 | 7 | 8 | 50 |
| 1 | 1405213043 | SHIVAM GUPTA | 10 | 10 | 20 | 1 | 1 | 8 | 9 | 0 | 1 | 37 |
| 2 | 1405231001 | ABHISHEK KUMAR | 14 | 13 | 27 | 1 | 1 | 10 | 10 | 1 | 1 | 47 |
| 3 | 1405231006 | AKANSHA VERMA | 10 | 12 | 22 | 1 | 1 | 9 | 10 | 1 | 1 | 41 |
| 4 | 1405231009 | AKASH VERMA | 9 | 12 | 21 | 1 | 1 | 10 | 9 | 1 | 1 | 40 |
| 5 | 1405231010 | AMAN GUPTA | 9 | 12 | 21 | 1 | 1 | 9 | 8 | 1 | 0 | 38 |
| 6 | 1405231011 | AMAN KUMAR SHARMA | 10 | 12 | 22 | 1 | 1 | 9 | 9 | 1 | 1 | 40 |
| 7 | 1405231012 | ANKITA ANAND | 8 | 12 | 20 | 1 | 1 | 9 | 10 | 1 | 1 | 39 |
| 8 | 1405231013 | ANKUR SONI | 7 | 9 | 16 | 0 | 1 | 8 | 9 | 0 | 1 | 33 |
| 9 | 1405231014 | ASTHA BHASKER | 11 | 10 | 21 | 1 | 1 | 9 | 9 | 1 | 1 | 39 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 10 | 1405231015 | CHITRANSHU MISHRA | 9 | 11 | 20 | 1 | 1 | 9 | 8 | 1 | 0 | 37 |
| 11 | 1405231016 | DEVESH SHUKLA | 8 | 0 | 8 | 1 | 0 | 9 | 10 | 1 | 1 | 27 |
| 12 | 1405231017 | DHARMENDRA KUMAR SINGH | 7 | 9 | 16 | 0 | 1 | 9 | 9 | 1 | 1 | 34 |
| 13 | 1405231018 | DIVYANSH | 8 | 9 | 17 | 1 | 1 | 8 | 9 | 0 | 1 | 34 |
| 14 | 1405231019 | GAURAV SINGH | 9 | 11 | 20 | 1 | 1 | 9 | 10 | 1 | 1 | 39 |
| 15 | 1405231020 | KANISHK GANGWAR | 3 | 4 | 7 | 0 | 0 | 9 | 10 | 1 | 1 | 26 |
| 16 | 1405231021 | KRISHNA KUMAR | 1 | 4 | 5 | 0 | 0 | 8 | 10 | 0 | 1 | 23 |
| 17 | 1405231022 | LOKENDRA KUMAR | 8 | 12 | 20 | 1 | 1 | 9 | 10 | 1 | 1 | 39 |
| 18 | 1405231023 | MANISH SACHAN | 11 | 13 | 24 | 1 | 1 | 10 | 10 | 1 | 1 | 44 |
| 19 | 1405231024 | MOHIT RAJ | 9 | 7 | 16 | 1 | 0 | 10 | 9 | 1 | 1 | 35 |
| 20 | 1405231025 | MONICA PANGTEY | 4 | 6 | 10 | 0 | 0 | 10 | 10 | 1 | 1 | 30 |
| 21 | 1405231026 | NEELANSHU VARSHNEY | 13 | 12 | 25 | 1 | 1 | 10 | 10 | 1 | 1 | 45 |
| 22 | 1405231027 | NEELIKA | 7 | 9 | 16 | 0 | 1 | 9 | 8 | 1 | 0 | 33 |
| 23 | 1405231028 | NIKHIL K SINGH | 2 | 5 | 7 | 0 | 0 | 8 | 8 | 0 | 0 | 23 |
| 24 | 1405231030 | PRASHANT KUMAR | 11 | 11 | 22 | 1 | 1 | 9 | 10 | 1 | 1 | 41 |
| 25 | 1405231031 | PRAVEEN SAHU | 4 | 4 | 8 | 0 | 0 | 8 | 9 | 0 | 1 | 25 |
| 26 | 1405231032 | PRIYADARSHINI DWIVEDI | 9 | 9 | 18 | 1 | 1 | 9 | 10 | 1 | 1 | 37 |
| 27 | 1405231033 | PRIYANK SRIVASTAVA | 2 | 6 | 8 | 0 | 0 | 8 | 9 | 0 | 1 | 25 |
| 28 | 1405231035 | RAJAN SINGH | 7 | 10 | 17 | 0 | 1 | 10 | 10 | 1 | 1 | 37 |
| 29 | 1405231036 | RAJAT CHAWLA | 6 | 5 | 11 | 0 | 0 | 9 | 10 | 1 | 1 | 30 |
| 30 | 1405231039 | SAH SWAPNIL AGRAWAL | 11 | 13 | 24 | 1 | 1 | 9 | 10 | 1 | 1 | 43 |
| 31 | 1405231041 | SAURABH KUMAR | 9 | 12 | 21 | 1 | 1 | 9 | 10 | 1 | 1 | 40 |
| 32 | 1405231042 | SAURABH KUMAR | 6 | 6 | 12 | 0 | 0 | 10 | 9 | 1 | 1 | 31 |
| 33 | 1405231043 | SAURABH KUMAR GAUTAM | 3 | 5 | 8 | 0 | 0 | 10 | 10 | 1 | 1 | 28 |
| 34 | 1405231044 | SHIKHA TIWARI | 5 | 8 | 13 | 0 | 0 | 9 | 10 | 1 | 1 | 32 |
| 35 | 1405231046 | SHIVANGI GUPTA | 6 | 9 | 15 | 0 | 1 | 9 | 10 | 1 | 1 | 34 |
| 36 | 1405231047 | SHREYA MISHRA | 11 | 11 | 22 | 1 | 1 | 10 | 10 | 1 | 1 | 42 |
| 37 | 1405231048 | SHUBHAM JAIN | 10 | 12 | 22 | 1 | 1 | 10 | 10 | 1 | 1 | 42 |
| 38 | 1405231050 | SHWETA KUMARI | 8 | 12 | 20 | 1 | 1 | 9 | 10 | 1 | 1 | 39 |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 39 | 1405231051 | SUNIL KUMAR | 2 | 5 | 7 | 0 | 0 | 10 | 10 | 1 | 1 | 27 |
| 40 | 1405231052 | VIDUSHI SAXENA | 9 | 5 | 14 | 1 | 0 | 9 | 10 | 1 | 1 | 33 |
| 41 | 1405231053 | VIJAY KUMAR YADAV | 10 | 11 | 21 | 1 | 1 | 9 | 10 | 1 | 1 | 40 |
| 42 | 1405231054 | VISHAD SAXENA | 6 | 3 | 9 | 0 | 0 | 9 | 9 | 1 | 1 | 27 |
| 43 | 1405231055 | YASH MISHRA | 8 | 6 | 14 | 1 | 0 | 9 | 10 | 1 | 1 | 33 |
| 44 | 1405232010 | AYUSH TRIPATHI | 5 | 11 | 16 | 0 | 1 | 10 | 10 | 1 | 1 | 36 |
| 45 | 1405232018 | JYOTI | 11 | 10 | 21 | 1 | 1 | 10 | 10 | 1 | 1 | 41 |
| 46 | 1405232025 | PARAS JAIN | 9 | 10 | 19 | 1 | 1 | 10 | 10 | 1 | 1 | 39 |
| 47 | 1405232045 | SHUBHI DIXIT | 12 | 12 | 24 | 1 | 1 | 10 | 9 | 1 | 1 | 43 |
| 48 | 1405251003 | ABHISHEK TRIVEDI | 9 | 8 | 17 | 1 | 0 | 9 | 10 | 1 | 1 | 36 |
| 49 | 1505231902 | ANOOP KUMAR | 5 | 8 | 13 | 0 | 0 | 9 | 10 | 1 | 1 | 32 |
| 50 | 1505231903 | ANURAG KUMAR MAURYA | 10 | 12 | 22 | 1 | 1 | 9 | 9 | 1 | 1 | 40 |
| 51 | 1505231904 | DEEPAK KUMAR VERMA | 11 | 9 | 20 | 1 | 1 | 10 | 10 | 1 | 1 | 40 |
| 52 | 1505231905 | DIVYANSH SRIVASTAVA | 10 | 7 | 17 | 1 | 0 | 10 | 9 | 1 | 1 | 36 |
| 53 | 1505231906 | IMRAN KHAN | 8 | 12 | 20 | 1 | 1 | 10 | 10 | 1 | 1 | 40 |
| 54 | 1505231907 | MADHURI KUMARI | 11 | 9 | 20 | 1 | 1 | 9 | 10 | 1 | 1 | 39 |
| 55 | 1505231908 | MO ASHIF ALI | 11 | 12 | 23 | 1 | 1 | 10 | 10 | 1 | 1 | 43 |
| 56 | 1505231909 | MOHIT JOUHARI | 6 | 7 | 13 | 0 | 0 | 9 | 9 | 1 | 1 | 31 |
| 57 | 1505231911 | TAZEEN FATIMA | 10 | 9 | 19 | 1 | 1 | 9 | 10 | 1 | 1 | 38 |
| 58 | 1505231912 | VIKASH KUMAR | 8 | 11 | 19 | 1 | 1 | 10 | 10 | 1 | 1 | 39 |
| | | Total | 466 | 524 | 990 | 38 | 38 | 536 | 556 | 51 | 54 | 2082 |
| | | Average | 8.03 | 9.03 | 17.1 | 65.5 | 65.52 | 9.24 | 9.59 | 87.9 | 93.1 | 36 |

Table 3.2.2.b

## COURSE OUTCOME ASSESSMENT EVALUATION WITH DIRECT PROCESS

| | Course | EC 703 | Subject Name | VLSI Design | Semester | 7 |
|---|---|---|---|---|---|---|
| | No of Students: | 58 | Faculty | Dr. Subodh Wairya | | |

Direct Assessment

| S.No. | (Sessional) | CO 1 | CO 2 | CO 3 | CO 4 | CO5 | Average |
|---|---|---|---|---|---|---|---|
| 1 | CT1 & CT2 | 65.52 | 65.52 | 65.52 | 65.52 | 65.52 | 65.52 |
| 2 | Quiz/Attain | 87.93 | 87.93 | 87.93 | 87.93 | 87.93 | 87.93 |
| 3 | Assignment | 93.10 | 93.10 | 93.10 | 93.10 | 93.10 | 93.10 |
| 4 | Direct Internal (CIE) | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 |
| S.No. | (End Semester Exam) | CO 1 | CO 2 | CO 3 | CO 4 | CO 5 | Average |
| 1 | Direct External (SEE ) | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 |

| % of students attained the course outcome | | | | | | |
|---|---|---|---|---|---|---|
| Assessment Types | CO1 | CO2 | CO3 | CO4 | CO5 | Avg CO |
| Direct Internal (CIE) | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 |
| Direct External (SEE ) | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 |
| Direct Assessment (DA)<br>DA=0.3*CIE + 0.7* SEE | 65.69 | 60.86 | 58.45 | 62.07 | 57.24 | 60.86 |
| Indirect Assessment (IA) | 84.3 | 81.0 | 85.2 | 89.8 | 79.2 | 83.89 |
| Total = 0.8*DA + 0.2*IA | 69.4 | 64.9 | 63.8 | 67.6 | 61.6 | 65.47 |
| Expectation w.r.t goal | ME | BE | BE | ME | BE | ME |
| Attained the course outcome w.r.t course attainment level | | | | | | |
| Assessment Types | CO1 | CO2 | CO3 | CO4 | CO5 | Average CO |
| Direct Internal (CIE) | 3 | 3 | 3 | 3 | 3 | 3.00 |
| Direct External (SEE ) | 1 | 0 | 0 | 0 | 0 | 0.20 |
| Direct Assessment (DA)<br>DA=0.3*CIE+ 0.7* SEE | 2 | 1 | 1 | 1 | 1 | 1.04 |
| Indirect Assessment (IA) | 3 | 3 | 3 | 3 | 3 | 3.00 |
| Total = 0.8*DA + 0.2*IA | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |

| **Weightage of attainment level** | |
|---|---|
| Direct Internal (CIE) | 30% |
| Direct External (SEE ) | 70% |
| Direct Assessment (DA) | 80% |
| Indirect Assessment (IA) | 20% |

| CO ATTAINED THROUGH SEMESTER END EXAMINATION (SEE) | | | | | | | CO ATTAINED THROUGH CUMULATIVE INTERNAL EXAMINATION (CIE) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COURSE** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **AVG** | **COURSE** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **AVG** |
| **1ST YEAR** | | | | | | | **1ST YEAR** | | | | | | |
| REC 201 | 66.13 | 59.68 | 64.52 | 48.39 | 53.23 | 58.39 | REC 201 | 81.48 | 81.48 | 82.01 | 82.01 | 82.01 | 81.80 |
| **3rd SEM** | | | | | | | **3rd SEM** | | | | | | |
| RAS 302 | 78.26 | 63.77 | 65.22 | 59.42 | 73.91 | 68.12 | RAS 302 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 |
| ROE 033 | 77.97 | 59.32 | 84.75 | 79.66 | 74.58 | 75.25 | ROE 033 | 83.62 | 83.62 | 83.62 | 83.62 | 83.62 | 83.62 |
| ROE 038 | 60.00 | 80.00 | 60.00 | 70.00 | 60.00 | 66.00 | ROE 038 | 96.67 | 96.67 | 90.00 | 90.00 | 90.00 | 92.67 |
| REE 305 | 55.07 | 57.97 | 57.97 | 52.17 | 50.72 | 54.78 | REE 305 | 84.54 | 84.54 | 84.54 | 84.54 | 84.54 | 84.54 |
| REC 301 | 66.67 | 52.17 | 66.67 | 69.57 | 57.97 | 62.61 | REC 301 | 82.61 | 82.61 | 84.54 | 84.54 | 84.54 | 83.77 |
| REC 302 | 49.28 | 50.72 | 49.28 | 63.77 | 55.07 | 53.62 | REC 302 | 80.68 | 80.68 | 80.68 | 80.68 | 80.68 | 80.68 |
| REC 303 | 66.67 | 57.97 | 57.97 | 53.62 | 56.52 | 58.55 | REC 303 | 82.13 | 82.13 | 71.01 | 71.01 | 71.01 | 75.46 |
| REC 351 | 75.36 | 75.36 | 75.36 | 75.36 | 75.36 | 75.36 | REC 351 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 |
| REC 352 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | REC 352 | 85.99 | 85.99 | 85.99 | 85.99 | 85.99 | 85.99 |
| REC 353 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | REC 353 | 87.92 | 87.92 | 87.92 | 87.92 | 87.92 | 87.92 |
| REC 354 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 | REC 354 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 | 82.61 |
| **4th SEM** | | | | | | | **4th SEM** | | | | | | |
| RCS 406 | 73.91 | 59.42 | 65.22 | 85.51 | 65.22 | 69.86 | RCS 406 | 82.13 | 82.13 | 82.13 | 82.13 | 82.13 | 82.13 |
| RAS 401 | 57.97 | 69.57 | 55.07 | 62.32 | 62.32 | 61.45 | RAS 401 | 69.08 | 69.08 | 69.08 | 69.08 | 69.08 | 69.08 |
| RVE 401 | 76.81 | 65.22 | 57.97 | 79.71 | 75.36 | 71.01 | RVE 401 | 89.86 | 89.86 | 89.86 | 89.86 | 89.86 | 89.86 |
| REC 401 | 73.91 | 59.42 | 65.22 | 85.51 | 65.22 | 69.86 | REC 401 | 88.89 | 88.89 | 88.89 | 88.89 | 88.89 | 88.89 |
| REC 402 | 73.91 | 59.42 | 65.22 | 85.51 | 65.22 | 69.86 | REC 402 | 90.82 | 90.82 | 89.37 | 89.37 | 89.37 | 89.95 |
| REC 403 | 73.91 | 59.42 | 65.22 | 85.51 | 65.22 | 69.86 | REC 403 | 92.75 | 92.75 | 89.86 | 89.86 | 89.86 | 91.01 |
| REC 451 | 89.86 | 89.86 | 89.86 | 89.86 | 89.86 | 89.86 | REC 451 | 87.92 | 87.92 | 87.92 | 87.92 | 87.92 | 87.92 |
| REC 452 | 81.16 | 81.16 | 81.16 | 81.16 | 81.16 | 81.16 | REC 452 | 87.44 | 87.44 | 87.44 | 87.44 | 87.44 | 87.44 |
| REC 453 | 92.75 | 92.75 | 92.75 | 92.75 | 92.75 | 92.75 | REC 453 | 72.46 | 72.46 | 72.46 | 72.46 | 72.46 | 72.46 |
| RCS 456 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | 97.10 | RCS 456 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 |
| **5th SEM** | | | | | | | **5th SEM** | | | | | | |
| EC 501 | 75.00 | 78.33 | 70.00 | 71.67 | 70.00 | 73.00 | EC 501 | 70.00 | 70.00 | 71.11 | 71.11 | 71.11 | 70.67 |
| EC 502 | 76.67 | 78.33 | 70.00 | 71.67 | 70.00 | 73.33 | EC 502 | 74.44 | 74.44 | 77.78 | 77.78 | 77.78 | 76.44 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC 503 | 75.00 | 78.33 | 70.00 | 71.67 | 70.00 | 73.00 | EC 503 | 61.67 | 61.67 | 62.78 | 62.78 | 62.78 | 62.33 |
| EC 504 | 66.67 | 68.33 | 58.33 | 78.33 | 78.33 | 70.00 | EC 504 | 85.56 | 85.56 | 84.44 | 84.44 | 84.44 | 84.89 |
| IC 501 | 76.67 | 78.33 | 70.00 | 71.67 | 70.00 | 73.33 | IC 501 | 81.11 | 81.11 | 81.11 | 81.11 | 81.11 | 81.11 |
| HU 501 | 60.00 | 70.00 | 66.67 | 58.33 | | 63.75 | HU 501 | 94.44 | 94.44 | 94.44 | 94.44 | | 94.44 |
| EC 551 | 66.67 | 66.67 | 66.67 | 66.67 | 66.67 | 66.67 | EC 551 | 96.67 | 96.67 | 96.67 | 96.67 | 96.67 | 96.67 |
| EC 552 | 83.33 | 83.33 | 83.33 | 83.33 | 83.33 | 83.33 | EC 552 | 93.33 | 93.33 | 93.33 | 93.33 | 93.33 | 93.33 |
| IC 551 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | IC 551 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| EC 553 | 81.67 | 81.67 | 81.67 | 81.67 | 81.67 | 81.67 | EC 553 | 71.67 | 71.67 | 71.67 | 71.67 | 71.67 | 71.67 |
| **6th SEM** | | | | | | | **6th SEM** | | | | | | |
| EC 601 | 76.67 | 78.33 | 70.00 | 71.67 | 70.00 | 73.33 | EC 601 | 79.44 | 79.44 | 85.00 | 85.00 | 85.00 | 82.78 |
| EC 602 | 53.33 | 65.00 | 63.33 | 56.67 | 61.67 | 60.00 | EC 602 | 91.11 | 91.11 | 91.67 | 91.67 | 91.67 | 91.44 |
| EC 603 | 58.33 | 50.00 | 46.67 | 53.33 | 46.67 | 51.00 | EC 603 | 87.78 | 87.78 | 87.78 | 87.78 | 87.78 | 87.78 |
| EC 011 | 63.33 | 61.67 | 60.00 | 68.33 | | 63.33 | EC 011 | 86.11 | 86.11 | 86.11 | 86.11 | | 86.11 |
| EC 023 | 60.61 | 62.12 | 53.03 | 71.21 | 71.21 | 63.64 | EC 023 | 86.11 | 86.11 | 91.67 | 91.67 | 91.67 | 89.44 |
| HU 601 | 55.00 | 65.00 | 71.67 | 53.33 | | 61.25 | HU 601 | 91.11 | 91.11 | 91.11 | 91.11 | | 91.11 |
| EC 651 | 86.67 | 86.67 | 86.67 | 86.67 | 86.67 | 86.67 | EC 651 | 97.22 | 97.22 | 97.22 | 97.22 | 97.22 | 97.22 |
| EC 652 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | EC 652 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 | 77.78 |
| EC 653 | 68.33 | 68.33 | 68.33 | 68.33 | 68.33 | 68.33 | EC 653 | 78.89 | 78.89 | 78.89 | 78.89 | 78.89 | 78.89 |
| EC 654 | 96.67 | 96.67 | 96.67 | 96.67 | 96.67 | 96.67 | EC 654 | 89.44 | 89.44 | 89.44 | 89.44 | 89.44 | 89.44 |
| **7th SEM** | | | | | | | **7th SEM** | | | | | | |
| OE 072 | 58.62 | 58.62 | 65.52 | 56.90 | 68.97 | 61.72 | OE 072 | 88.51 | 88.51 | 88.51 | 88.51 | 88.51 | 88.51 |
| EC 021 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 021 | 84.48 | 84.48 | 85.06 | 85.06 | 85.06 | 84.83 |
| EC 701 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 701 | 89.66 | 89.66 | 97.70 | 97.70 | 97.70 | 94.48 |
| EC 702 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 702 | 77.01 | 77.01 | 77.59 | 77.59 | 77.59 | 77.36 |
| EC 703 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 703 | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 | 82.18 |
| EC 751 | 58.62 | 58.62 | 58.62 | 58.62 | 58.62 | 58.62 | EC 751 | 91.38 | 91.38 | 91.38 | 91.38 | 91.38 | 91.38 |
| EC 752 | 82.76 | 82.76 | 82.76 | 82.76 | 82.76 | 82.76 | EC 752 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| EC 753 | 96.55 | 96.55 | 96.55 | 96.55 | 96.55 | 96.55 | EC 753 | 99.43 | 99.43 | 99.43 | 99.43 | 99.43 | 99.43 |
| EC 754 | 46.55 | 46.55 | 46.55 | 46.55 | 46.55 | 46.55 | EC 754 | 88.51 | 88.51 | 88.51 | 88.51 | 88.51 | 88.51 |

COURSE OUTCOMES AND PROGRAM OUTCOMES

| 8th SEM | | | | | | | 8th SEM | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| OE 081 | 70.69 | 70.69 | 70.69 | 70.69 | 70.69 | 70.69 | OE 081 | 95.40 | 95.40 | 95.40 | 95.40 | 95.40 | 95.40 |
| EC 031 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 031 | 81.61 | 81.61 | 81.61 | 81.61 | 81.61 | 81.61 |
| EC 801 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 801 | 78.16 | 78.16 | 75.29 | 75.29 | 75.29 | 76.44 |
| EC 802 | 58.62 | 51.72 | 48.28 | 53.45 | 46.55 | 51.72 | EC 802 | 74.71 | 74.71 | 73.56 | 73.56 | 73.56 | 74.02 |
| EC 851 | 72.41 | 72.41 | 72.41 | 72.41 | 72.41 | 72.41 | EC 851 | 70.69 | 70.69 | 70.69 | 70.69 | 70.69 | 70.69 |

Table 3.2.2.c

**Attainment Level: Rationale**

| | | | |
|---|---|---|---|
| **EE** | **Exceed Expectation** | **Attain.:>75% of goal** | |
| **ME** | **Meet Expectation** | **Attain. Between: 65% < goal < 75%** | |
| **BE** | **Below Expectation** | **Attain. between :55% < goal < 65%** | |
| **NA** | **Can not rate** | **Attain.: <55% of goal** | |
| **Goal** | **70%** | **Exceed Expectation (EE)** | |
| **Code** | **Attainment Level** | **Description (Goal = 70%)** | **Value** |
| EE | Level 3 | Attainment obtained greater than or equal to 75% | 3 |
| ME | Level 2 | Attainment obtained between 65% to 75% | 2 |
| BE | Level 1 | Attainment obtained between 55% to 65% | 1 |

**PERCENTAGE OF STUDENTS ATTAINED THE OUTCOME ATTAINMENT LEVEL**

| % OF STUDENT ATTAINED THE CO OUTCOME | | | | | | | ATTAINED THE OUTCOME ATTAINMENT LEVEL | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **COURSE** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **AVG** | **COURSE** | **CO1** | **CO2** | **CO3** | **CO4** | **CO5** | **AVG** |
| **1ST YEAR** | | | | | | | **1ST YEAR** | | | | | | |
| REC 201EC | 72.7 | 68.9 | 72.3 | 64.1 | 66.5 | 68.89 | REC 201EC | 2.44 | 1.88 | 1.88 | 1.32 | 2.2 | 1.94 |
| **3rd SEM** | | | | | | | **3rd SEM** | | | | | | |
| RAS 302 | 79.8 | 71.4 | 72.8 | 70.4 | 78.2 | 74.54 | RAS 302 | 3 | 1.88 | 2.44 | 1.88 | 2.44 | 2.33 |
| ROE 033 | 81.1 | 70.7 | 85.3 | 82.6 | 79.1 | 79.78 | ROE 033 | 3 | 1.88 | 3 | 3 | 2.2 | 2.62 |
| ROE 038 | 73.1 | 84.3 | 71.5 | 77.1 | 71.5 | 75.45 | ROE 038 | 1.88 | 3 | 1.88 | 2.44 | 2.2 | 2.28 |
| REE 305 | 66.9 | 68.8 | 68.6 | 64.5 | 65.2 | 66.81 | REE 305 | 1.88 | 1.88 | 1.88 | 1.32 | 1.32 | 1.66 |
| REC 301 | 73.3 | 64.9 | 74.1 | 76.6 | 69.8 | 71.73 | REC 301 | 2.44 | 1.32 | 2.44 | 2.44 | 1.88 | 2.10 |
| REC 302 | 63.1 | 63.7 | 63.4 | 72.4 | 67.2 | 65.96 | REC 302 | 1.32 | 1.32 | 1.32 | 1.88 | 1.88 | 1.54 |
| REC 303 | 73.2 | 68.1 | 66.0 | 64.4 | 65.7 | 67.46 | REC 303 | 2.44 | 1.88 | 1.64 | 1.08 | 1.64 | 1.74 |
| REC 351EC | 76.7 | 76.4 | 77.2 | 77.9 | 77.3 | 77.09 | REC 351EC | 3 | 3 | 3 | 3 | 3 | 3.00 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REC 352EC | 88.6 | 88.4 | 89.2 | 89.8 | 89.3 | 89.08 | REC 352EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| REC 353EC | 89.4 | 89.2 | 90.0 | 90.6 | 90.1 | 89.85 | REC 353EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| REC 354EC | 81.5 | 81.2 | 82.1 | 82.7 | 82.1 | 81.93 | REC 354EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| **4th SEM** | | | | | | | **4th SEM** | | | | | | |
| RCS 406 | 76.5 | 70.2 | 71.9 | 82.2 | 71.0 | 74.35 | RCS 406 | 2.44 | 1.88 | 2.44 | 2.8 | 2.24 | 2.36 |
| RAS 401 | 65.2 | 71.4 | 63.9 | 68.8 | 68.5 | 67.56 | RAS 401 | 1.64 | 2.2 | 1.64 | 1.64 | 1.64 | 1.75 |
| RVE 401 | | | | | | | RVE 401 | | | | | | |
| REC 401 | 78.2 | 71.1 | 75.0 | 87.0 | 74.6 | 77.19 | REC 401 | 2.44 | 1.88 | 2.44 | 3 | 2.44 | 2.44 |
| REC 402 | 79.6 | 71.0 | 74.7 | 86.7 | 74.8 | 77.35 | REC 402 | 2.44 | 1.88 | 2.44 | 3 | 2.44 | 2.44 |
| REC 403 | 80.1 | 72.6 | 74.4 | 86.4 | 75.6 | 77.82 | REC 403 | 2.44 | 1.88 | 2.44 | 3 | 2.44 | 2.44 |
| REC 451EC | 86.5 | 86.3 | 87.1 | 87.7 | 87.2 | 86.95 | REC 451EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| REC 452EC | 82.8 | 82.6 | 83.4 | 84.1 | 83.5 | 83.28 | REC 452EC | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 | 3.00 |
| REC 453EC | 81.5 | 81.2 | 82.1 | 82.7 | 82.1 | 81.93 | REC 453EC | 2.6 | 2.6 | 2.6 | 2.6 | 2.6 | 2.60 |
| RCS 456EC | 85.8 | 85.8 | 86.2 | 86.5 | 85.9 | 86.03 | RCS 456EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| REC 402 EE | 65.0 | 56.2 | 60.0 | 62.3 | 65.7 | 61.84 | REC 402 EE | 1.32 | 1.32 | 1.32 | 1.32 | 1.32 | 1.32 |
| **5th SEM** | | | | | | | **5th SEM** | | | | | | |
| EC 501 | 76.6 | 77.1 | 72.0 | 75.4 | 73.2 | 74.88 | EC 501 | 2.76 | 2.76 | 2.20 | 2.20 | 2.20 | 2.48 |
| EC 502 | 78.2 | 79.3 | 75.5 | 77.0 | 74.8 | 76.97 | EC 502 | 2.76 | 2.76 | 2.44 | 2.44 | 2.44 | 2.57 |
| EC 503 | 74.0 | 73.5 | 69.9 | 71.5 | 68.4 | 71.47 | EC 503 | 2.52 | 2.32 | 1.96 | 1.96 | 1.76 | 2.19 |
| EC 504 | 75.6 | 76.2 | 71.0 | 82.1 | 82.3 | 77.43 | EC 504 | 2.44 | 2.44 | 1.88 | 3.00 | 3.00 | 2.55 |
| IC 501 | 79.1 | 79.8 | 75.1 | 77.1 | 75.2 | 77.27 | IC 501 | 3 | 3 | 2.44 | 2.44 | 2.44 | 2.66 |
| HU 501 | 74.0 | 79.3 | 78.1 | 73.3 | - | 76.14 | HU 501 | 1.88 | 2.44 | 2.44 | 1.88 | - | 2.16 |
| EC 551EC | 80.6 | 79.5 | 80.4 | 80.9 | 80.8 | 80.45 | EC 551EC | 2.52 | 2.52 | 2.52 | 2.52 | 2.52 | 2.52 |
| EC 552EC | 86.8 | 87.3 | 87.6 | 87.6 | 87.3 | 87.29 | EC 552EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| IC 551EC | 97.4 | 97.1 | 96.2 | 97.3 | 97.0 | 96.98 | IC 551EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| EC 553EC | 79.1 | 79.4 | 80.4 | 80.3 | 80.2 | 79.86 | EC 553EC | 2.68 | 2.68 | 2.68 | 2.68 | 2.68 | 2.68 |
| **6th SEM** | | | | | | | **6th SEM** | | | | | | |
| EC 601 | 78.3 | 80.5 | 75.0 | 76.7 | 76.2 | 77.34 | EC 601 | 3 | 3 | 2.44 | 2.44 | 2.44 | 2.66 |
| EC 602 | 68.5 | 75.2 | 74.4 | 71.3 | 72.9 | 72.48 | EC 602 | 1.32 | 2.44 | 1.88 | 1.88 | 1.88 | 1.88 |
| EC 603 | 70.9 | 65.9 | 64.4 | 69.2 | 64.0 | 66.90 | EC 603 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 011 | 73.5 | 72.8 | 71.9 | 77.2 | - | 73.84 | EC 011 | 1.88 | 1.88 | 1.88 | 2.44 | - | 2.02 |

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC 023 | 70.7 | 71.3 | 68.1 | 79.2 | 78.9 | 73.67 | EC 023 | 1.88 | 1.88 | 1.32 | 2.44 | 2.44 | 1.99 |
| HU 601 | 70.4 | 75.7 | 80.1 | 69.7 | - | 73.94 | HU 601 | 1.88 | 2.44 | 2.44 | 1.32 | - | 2.02 |
| EC 651EC | 89.7 | 89.4 | 90.0 | 90.0 | 90.0 | 89.81 | EC 651EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| EC 652EC | 90.4 | 89.8 | 90.5 | 91.0 | 90.9 | 90.56 | EC 652EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| EC 653EC | 74.9 | 74.9 | 75.3 | 75.8 | 76.0 | 75.38 | EC 653EC | 2.52 | 2.52 | 2.52 | 2.52 | 2.52 | 2.52 |
| EC 654EC | 93.0 | 92.8 | 93.7 | 94.5 | 93.8 | 93.55 | EC 654EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| **7th SEM** | | | | | | | **7th SEM** | | | | | | |
| OE 072 | 71.5 | 71.7 | 75.5 | 71.3 | 76.8 | 73.36 | OE 072 | 1.88 | 1.88 | 2.44 | 1.88 | 2.2 | 2.06 |
| EC 021 | 70.5 | 66.8 | 63.2 | 67.8 | 63.4 | 66.36 | EC 021 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 701 | 71.8 | 68.1 | 68.1 | 71.6 | 66.5 | 69.20 | EC 701 | 1.88 | 1.32 | 1.32 | 1.32 | 2.2 | 1.61 |
| EC 702 | 68.0 | 63.7 | 62.3 | 65.2 | 62.2 | 64.29 | EC 702 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 703 | 69.4 | 64.9 | 63.8 | 67.6 | 61.6 | 65.47 | EC 703 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 751EC | 75.4 | 75.1 | 76.1 | 76.8 | 76.2 | 75.91 | EC 751EC | 2.04 | 2.04 | 2.04 | 2.04 | 2.04 | 2.04 |
| EC 752EC | 88.4 | 88.0 | 88.2 | 88.1 | 87.9 | 88.12 | EC 752EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| EC 753EC | 96.2 | 95.9 | 96.8 | 97.6 | 96.9 | 96.69 | EC 753EC | 3 | 3 | 3 | 3 | 3 | 3.00 |
| EC 754EC | 68.7 | 68.4 | 69.3 | 70.1 | 69.4 | 69.19 | EC 754EC | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 | 1.56 |
| **8th SEM** | | | | | | | **8th SEM** | | | | | | |
| OE 081 | 79.9 | 80.1 | 80.1 | 80.7 | 79.4 | 80.04 | OE 081 | 2.44 | 2.44 | 2.44 | 2.44 | 2.2 | 2.39 |
| EC 031 | 68.0 | 65.0 | 63.5 | 66.6 | 60.7 | 64.77 | EC 031 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 801 | 67.9 | 64.5 | 61.9 | 65.4 | 60.0 | 63.92 | EC 801 | 1.88 | 1.32 | 1.32 | 1.32 | 1.32 | 1.43 |
| EC 802 | 68.2 | 63.9 | 61.5 | 65.3 | 59.9 | 63.77 | EC 802 | 1.64 | 1.08 | 1.08 | 1.08 | 1.08 | 1.19 |
| EC 851EC | 74.1 | 74.4 | 74.1 | 75.0 | 73.7 | 74.25 | EC 851EC | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.20 |

Table 3.2.2.d

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

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

In Outcome based Education, assessment done through one or more than one processescarried out by the institution that identify, collect, and prepare data to evaluate the achievement of programme educational objectives, program outcomes and course objectives and outcomes.

**PO Assessment Tools:** Assessment tools are categorized into direct and indirect methods to assess the programme educational objectives, program outcomes and course outcomes.

**Direct methods:** Displayknowledge and skills of the students from their performance in the continuous assessment tests, end–semester examinations, presentations, and classroom assignments etc. These methods provide a sample of student's knowledge.

| Course | EC 703 | | Subject Name | VLSI Design | | | Semester | 7 | Faculty | Dr. Subodh Wairya | | No of Student | | | 58 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES | | | | | | | | | | | |
| S. N. | Exam | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | H | - | - | - | - | - | - | - | - | - | - | - | H | - | M |
| 2 | CO2 | - | - | M | - | - | - | - | - | - | - | - | - | H | H | M |
| 3 | CO3 | - | - | L | M | - | - | - | - | H | - | - | - | - | H | |
| 4 | CO4 | - | - | H | H | - | - | - | - | - | - | - | - | - | - | M |
| 5 | CO5 | - | - | - | - | - | - | - | - | - | - | - | H | - | - | H |
| | | | | | | | | | | | | | | | | |
| | | | MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES USING 1,2,3 | | | | | | | | | | | | | |
| S. N. | Exam | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 |
| 2 | CO2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 2 |
| 3 | CO3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 |
| 4 | CO4 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5 | CO5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| Normal CO & PO | EC 703 | 3.00 | 0.00 | 2.00 | 2.50 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 | 2.25 |
| Total No of Students: | 58 | | | | % of students attained CO Direct Assessment (DA) | | | | | | | | | | | |
| Direct Attainment of CO | Exam | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 65.69 | CO1 | 1.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.97 | 0.00 | 1.31 |
| 60.86 | CO2 | 0.00 | 0.00 | 1.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.83 | 1.83 | 1.22 |
| 58.45 | CO3 | 0.00 | 0.00 | 0.58 | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 |
| 65.34 | CO4 | 0.00 | 0.00 | 1.96 | 1.96 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.31 |
| 57.24 | CO5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.72 | 0.00 | 0.00 | 1.72 |
| Average PO | EC 703 | 1.97 | 0.00 | 1.25 | 1.56 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 | 0.00 | 1.72 | 1.90 | 1.79 | 1.39 |

**Indirect methods** such as surveys ask the stakeholders to reflect on student's learning. They assess opinions or thoughts about the graduate's knowledge or skills and their values by different stakeholders.

**Indirect Assessment (Survey) Methods:**

**Programme outcomes / Assessment Report:** At the end of every academic year annual report is developed where the statistics of students who have participated in professional bodies/ student chapters /workshops/seminars /conferences/paper presentations / internships /industry visit etc. is prepared. This statement is considered to indirectly assess the PO's.

**Alumni Survey:** Collect variety of information about program satisfaction, from Graduates after every 3 years.

**Employer Survey:** Provide information about our graduate's skills and capability– After every 3 years

**Student Exit Survey:**

| Course | EC 703 | | Subject Name | VLSI Design | | Semester | 7 | Faculty | Dr. Subodh Wairya | | No of Student | | 58 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | MAPPING OF COURSE OUTCOME WITH PROGRAM OUTCOMES USING 1,2,3 | | | | | | | | | | | | |
| S. N. | Exam | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 2 |
| 2 | CO2 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 3 | 2 |
| 3 | CO3 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 3 | 0 |
| 4 | CO4 | 0 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 5 | CO5 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 3 | 0 | 0 | 3 |
| Normal CO & PO | EC 703 | 3.00 | 0.00 | 2.00 | 2.50 | 0.00 | 0.00 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 3.00 | 3.00 | 3.00 | 2.25 |
| | | | | | % of student Attained CO Indirect Assessment (IA) | | | | | | | | | | | |
| Indirect Attainment of CO | Survey | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 84.26 | CO1 | 2.53 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.53 | 0.00 | 1.69 |
| 81.02 | CO2 | 0.00 | 0.00 | 1.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.43 | 2.43 | 1.62 |
| 85.19 | CO3 | 0.00 | 0.00 | 0.85 | 1.70 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 |
| 89.81 | CO4 | 0.00 | 0.00 | 2.69 | 2.69 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.80 |
| 79.17 | CO5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.38 | 0.00 | 0.00 | 2.38 |
| Average PO | EC 703 | 2.53 | 0.00 | 1.72 | 2.20 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 | 0.00 | 2.38 | 2.48 | 2.49 | 1.87 |
| | | | | | | | | | | | | | | | | |

| Over all PO Attaint | | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Direct PO & PSO Attain | CO | 1.97 | 0.00 | 1.25 | 1.56 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 | 0.00 | 1.72 | 1.90 | 1.79 | 1.39 |
| Indirect PO & PSO Attain | CO | 2.53 | 0.00 | 1.72 | 2.20 | 0.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 | 0.00 | 2.38 | 2.48 | 2.49 | 1.87 |
| Total=0.8*DA+0.2*ID | EC 703 | 2.08 | 0.00 | 1.35 | 1.69 | 0.00 | 0.00 | 0.00 | 0.00 | 1.91 | 0.00 | 0.00 | 1.85 | 2.01 | 1.93 | 1.48 |

To evaluate the success of program in providing students with opportunities to achieve the program outcomes every year. Since an outcome can be achieved in more than one course. Hence while assessing a specific outcomenumbers of courses are assessed and both core and electives course are assessed.

**Course Exit survey:** At the end of every semester, students give feedback for the course taught to them. In this feedback survey students tell how effective course was in order to achieve POs.

Indirect Attained PO & PSO:

# STUDENT'S FEEDBACK FORM

Session: Year:

Semester

Please provide your feedback on the courses using the criteria A to E by responding to a scale of 4 to 0 against each subject (4-Strongly Agree, 3- Agree, 2- Neutral 1- Disagree, 0- Strongly Disagree)

| | Course No. / Criteria | EC701 | EC702 | EC703 | EC021 | OE071 |
|---|---|---|---|---|---|---|
| A | The Course was timely completed according to the prescribed syllabus | | | | | |
| B | Topic were explained clearly and generated interest in the subject | | | | | |
| C | Teacher effectively encourage students to ask question and provide answer | | | | | |
| D | Evaluation and feedback by teacher was provide timely and effectively. | | | | | |
| E | Teacher was effective, Overall in helping me learn | | | | | |
| Suggest way to improve this course (e.g. change in course structure assignment etc. use the space overleaf for comments) | | | | | | |

# Course Exit Survey

## (Course Name-VLSI DESIGN, course code-EC703)

Rate your perception about following statements in the range of 1 to 5, where 1 indicates "strongly disagree" and 5 indicates "strongly agree"

AFTER COMPLETION OF THIS COURSE, YOU ARE ABLE TO...

* Required

NAME *_____

ROLL NO. *_____

1.Model the behavior of a MOS Transistor and VLSI design methodology. * Mark only one oval.

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| STRONGLY DISAGREE | ◯ | ◯ | ◯ | ◯ | ◯ | STRONGLY AGREE |

2. Understand the different types of MOS inverters and their switching characteristics. *Mark only one oval.

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| STRONGLY DISAGREE | ◯ | ◯ | ◯ | ◯ | ◯ | STRONGLY AGREE |

3. Understand the Combinational and sequential MOS based Logic Circuits. * Mark only one oval.

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| STRONGLY DISAGREE | ◯ | ◯ | ◯ | ◯ | ◯ | STRONGLY AGREE |

4.Analyze SRAM cell and memory arrays and basic principle of pass transistor circuits. *Mark only one oval.

| | 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|---|
| STRONGLY DISAGREE | ◯ | ◯ | ◯ | ◯ | ◯ | STRONGLY AGREE |

5. Understand the concept of Power Consumption in Low Power CMOS Logic Circuits. *Mark only one oval.

| 1 | 2 | 3 | 4 | 5 | |
|---|---|---|---|---|---|
| STRONGLY DISAGREE | ◯ | ◯ | ◯ | ◯ | ◯ | STRONGLY AGREE |

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### 3.3.2 Program shall set Program Outcome attainment levels for all POs& PSOs.

The attainment levels by Direct (student performance) are to be presented through Program level Course-PO &PSO matrices as indicated

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | POS1 | POS2 | POS3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1ST YEAR** | | | | | | | | | | | | | | | |
| REC 201EC | 2.07 | 1.92 | 0.60 | 1.92 | 0.00 | 0.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.07 | 1.40 | 0.60 |
| **3rd SEM** | | | | | | | | | | | | | | | |
| RAS 302 | 0.00 | 0.72 | 0.88 | 0.00 | 0.00 | 0.72 | 2.17 | 0.00 | 0.00 | 0.00 | 0.00 | 1.45 | 1.59 | 1.42 | 1.53 |
| ROE 033 | 0.78 | 2.02 | 1.09 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.56 | 1.59 | 1.62 | 1.55 |
| ROE 038 | 0.74 | 2.22 | 1.19 | 0.77 | 0.00 | 0.00 | 0.00 | 0.00 | 0.74 | 0.00 | 0.00 | 2.22 | 1.42 | 1.43 | 1.38 |
| REE 305 | 1.91 | 1.51 | 1.90 | 0.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.96 | 1.23 | 0.00 |
| REC 301 | 1.65 | 1.53 | 1.98 | 1.32 | 1.15 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.40 | 1.43 | 1.41 | 1.32 |
| REC 302 | 1.85 | 1.27 | 1.28 | 0.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.64 | 1.20 | 1.28 | 0.69 |
| REC 303 | 1.91 | 1.55 | 0.62 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.60 | 1.28 | 0.81 | 0.61 |
| REC 351 | 2.28 | 1.52 | 2.28 | 0.00 | 1.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.90 | 1.52 | 1.52 |
| REC 352 | 2.63 | 1.88 | 1.88 | 0.00 | 1.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 2.19 | 1.88 |
| REC 353 | 2.83 | 1.89 | 0.94 | 1.89 | 1.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 1.89 | 1.89 |
| REC 354 | 2.31 | 1.65 | 1.65 | 1.65 | 1.65 | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 0.00 | 0.83 | 1.93 | 1.65 |
| **4th SEM** | | | | | | | | | | | | | | | |
| RCS 406 | 1.32 | 0.00 | 1.55 | 0.00 | 1.12 | 0.00 | 0.00 | 0.00 | 1.90 | 0.00 | 0.00 | 1.85 | 0.00 | 1.50 | 1.50 |
| RAS 401 | 0.64 | 1.91 | 1.53 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 0.00 | 0.00 | 1.27 | 1.23 | 1.25 | 1.29 |
| RVE 401 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.25 | 2.30 | 2.30 | 1.53 | 0.77 | 0.00 | 2.30 | 0.00 | 0.00 | 1.59 |
| REC 401 | 1.67 | 0.70 | 0.00 | 0.00 | 2.03 | 0.00 | 0.00 | 0.00 | 2.03 | 0.00 | 0.00 | 2.27 | 1.66 | 1.98 | 1.51 |
| REC 402 | 2.28 | 1.66 | 0.93 | 1.01 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.81 | 0.00 | 0.00 |
| REC 403 | 1.62 | 0.98 | 2.29 | 0.87 | 0.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.78 | 2.03 | 0.94 | 0.73 |
| REC 451 | 0.89 | 0.00 | 0.00 | 0.00 | 2.38 | 0.00 | 0.00 | 0.00 | 2.38 | 0.00 | 0.00 | 0.00 | 1.96 | 2.38 | 1.79 |
| REC 452 | 2.49 | 1.66 | 1.25 | 1.66 | 1.25 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.66 | 0.00 | 1.66 |
| REC 453 | 2.60 | 1.73 | 0.87 | 1.73 | 1.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.87 | 1.73 | 1.73 |
| RCS 456 | 2.74 | 1.83 | 2.74 | 0.00 | 1.83 | 0.91 | 2.74 | 0.00 | 0.00 | 1.83 | 1.83 | 1.83 | 2.28 | 1.83 | 1.83 |
| **5th SEM** | | | | | | | | | | | | | | | |
| EC 501 | 2.17 | 1.46 | 0.70 | 1.44 | 1.46 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.41 | 0.72 | 1.46 | 1.47 |
| EC 502 | 2.26 | 1.78 | 1.73 | 0.75 | 1.45 | 0.00 | 0.00 | 0.00 | 0.00 | 1.52 | 1.45 | 0.77 | 1.52 | 1.65 | 1.11 |
| EC 503 | 0.72 | 0.00 | 0.00 | 0.00 | 1.36 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 1.36 | 1.76 | 0.67 | 0.00 |
| EC 504 | 2.23 | 1.47 | 0.66 | 1.60 | 1.99 | 0.00 | 0.00 | 0.00 | 0.00 | 1.60 | 0.00 | 1.20 | 2.19 | 1.60 | 1.11 |
| IC 501 | 2.27 | 1.97 | 0.94 | 0.75 | 0.79 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.68 | 0.00 | 0.00 |
| HU 501 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.92 | 0.00 | 0.00 | 1.26 | 0.00 | 1.63 | 1.27 | 2.23 | 0.00 | 1.10 |
| EC 551 | 2.27 | 1.89 | 2.27 | 0.76 | 2.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.27 | 1.51 | 0.00 |
| EC 552 | 2.59 | 1.73 | 2.59 | 0.00 | 1.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.16 | 1.73 | 1.73 |
| IC 551 | 3.00 | 1.67 | 0.00 | 0.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.20 | 0.00 | 2.00 |
| EC 553 | 2.36 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 0.00 | 2.10 | 0.00 | 0.00 | 0.00 | 1.73 | 2.10 | 1.57 |
| **6th SEM** | | | | | | | | | | | | | | | |
| EC 601 | 2.31 | 1.56 | 0.78 | 1.49 | 1.52 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.77 | 1.55 | 1.49 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC 602 | 2.10 | 1.64 | 1.35 | 1.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.41 | 0.00 | 0.68 | 1.92 | 1.41 | 1.05 |
| EC 603 | 1.24 | 1.20 | 1.18 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.29 | 1.89 | 0.00 | 0.00 |
| EC 011 | 1.58 | 1.71 | 2.04 | 0.92 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.77 | 1.40 | 1.38 | 0.77 |
| EC 023 | 2.15 | 1.69 | 1.66 | 1.74 | 1.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.05 | 1.42 | 1.37 |
| HU 601 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 | 1.22 | 0.00 | 1.57 | 1.22 | 2.16 | 0.00 | 1.05 |
| EC 651 | 2.16 | 1.80 | 0.00 | 0.00 | 2.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.44 | 1.80 | 1.80 |
| EC 652 | 2.80 | 1.87 | 1.87 | 1.87 | 1.87 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.87 | 2.18 | 1.87 |
| EC 653 | 2.00 | 1.43 | 1.43 | 1.43 | 1.43 | 0.00 | 0.00 | 0.00 | 0.72 | 0.00 | 0.00 | 0.00 | 0.72 | 1.67 | 1.43 |
| EC 654 | 0.00 | 0.00 | 0.00 | 0.95 | 0.00 | 0.00 | 0.00 | 0.00 | 1.89 | 1.89 | 0.00 | 0.00 | 1.89 | 0.00 | 1.89 |
| **7th SEM** | | | | | | | | | | | | | | | |
| OE 071 | 2.11 | 1.69 | 1.47 | 0.00 | 1.21 | 0.68 | 0.00 | 0.00 | 0.00 | 0.72 | 0.00 | 1.45 | 0.70 | 1.40 | 1.35 |
| EC 021 | 1.74 | 1.45 | 1.24 | 0.93 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.16 | 0.00 | 0.62 | 1.84 | 1.16 | 0.95 |
| EC 701 | 1.94 | 1.55 | 1.25 | 0.00 | 1.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.63 | 0.00 | 1.26 | 0.66 | 1.26 | 1.36 |
| EC 702 | 1.92 | 1.17 | 0.00 | 0.00 | 1.16 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 0.00 | 0.59 | 1.15 | 1.18 |
| EC 703 | 1.97 | 0.00 | 1.25 | 1.56 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 0.00 | 0.00 | 1.72 | 1.90 | 1.79 | 1.39 |
| EC 751 | 2.05 | 1.37 | 0.00 | 0.00 | 2.05 | 0.00 | 1.37 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.37 | 1.37 | 1.37 |
| EC 752 | 2.29 | 1.76 | 0.00 | 0.00 | 200 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.76 | 1.76 | 1.76 |
| EC 753 | 0.00 | 0.00 | 1.95 | 0.00 | 2.92 | 0.00 | 0.00 | 0.00 | 2.92 | 1.95 | 0.00 | 1.95 | 2.34 | 0.00 | 0.00 |
| EC 754 | 1.38 | 1.18 | 0.89 | 0.89 | 0.89 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.89 | 0.89 | 1.18 |
| **8th SEM** | | | | | | | | | | | | | | | |
| OE 081 | 2.35 | 1.88 | 1.56 | 0.00 | 1.30 | 0.78 | 0.00 | 0.00 | 0.00 | 0.78 | 0.00 | 1.56 | 0.78 | 1.56 | 1.56 |
| EC 031 | 1.81 | 1.21 | 0.00 | 0.00 | 1.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.17 | 0.62 | 1.19 | 1.31 |
| EC 801 | 1.81 | 1.20 | 0.56 | 1.32 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.13 | 0.60 | 1.16 | 1.24 |
| EC 802 | 1.76 | 1.12 | 0.56 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 0.00 | 1.20 | 0.55 | 1.12 | 1.21 |
| EC 851 | 1.68 | 1.44 | 1.08 | 1.08 | 1.08 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.08 | 1.08 | 1.44 |

Table 3.3.2.a

The attainment levels by Indirect (surveys) are to be presented through Program level Course-PO &PSO matrices as indicated

| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | POS1 | POS2 | POS3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1ST YEAR** | | | | | | | | | | | | | | | |
| REC 201EC | 2.42 | 2.53 | 0.86 | 2.53 | 0.00 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.42 | 1.65 | 0.86 |
| **3rd SEM** | | | | | | | | | | | | | | | |
| RAS 302 | 0.00 | 0.83 | 1.00 | 0.00 | 0.00 | 0.83 | 2.48 | 0.00 | 0.00 | 0.00 | 0.00 | 1.66 | 1.61 | 1.69 | 1.70 |
| ROE 033 | 0.88 | 2.28 | 1.23 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.76 | 1.74 | 1.77 | 1.73 |
| ROE 038 | 0.81 | 2.44 | 1.30 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.81 | 0.00 | 0.00 | 2.44 | 1.63 | 1.63 | 1.63 |
| REE 305 | 2.38 | 1.83 | 2.43 | 0.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.38 | 1.58 | 0.00 |
| REC 301 | 1.99 | 1.88 | 2.55 | 1.70 | 1.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.68 | 1.61 | 1.69 | 1.70 |
| REC 302 | 2.48 | 1.69 | 1.69 | 0.81 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.83 | 1.65 | 1.67 | 0.87 |
| REC 303 | 2.48 | 2.08 | 0.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.84 | 1.66 | 1.12 | 0.85 |
| REC 351 | 2.38 | 1.57 | 2.49 | 0.00 | 1.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.97 | 1.60 | 1.63 |
| REC 352 | 2.22 | 1.60 | 1.65 | 1.63 | 1.57 | 0.00 | 0.00 | 0.00 | 1.62 | 0.00 | 0.00 | 0.00 | 0.79 | 1.90 | 1.63 |
| REC 353 | 2.35 | 1.57 | 0.78 | 1.62 | 1.60 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.78 | 1.54 | 1.59 |
| REC 354 | 2.22 | 1.60 | 1.65 | 1.63 | 1.57 | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 0.00 | 0.79 | 1.90 | 1.63 |
| **4th SEM** | | | | | | | | | | | | | | | |
| RCS 406 | 1.40 | 0.00 | 1.47 | 0.00 | 1.14 | 0.00 | 0.00 | 0.00 | 1.84 | 0.00 | 0.00 | 1.90 | 0.00 | 1.51 | 1.51 |
| RAS 401 | 0.83 | 2.48 | 1.99 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 1.66 | 1.61 | 1.69 | 1.70 |
| RVE 401 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.33 | 2.48 | 2.48 | 1.66 | 0.83 | 0.00 | 2.48 | 0.00 | 0.00 | 1.70 |
| REC 401 | 1.83 | 0.84 | 0.00 | 0.00 | 2.28 | 0.00 | 0.00 | 0.00 | 2.28 | 0.00 | 0.00 | 2.56 | 1.84 | 2.26 | 1.70 |
| REC 402 | 2.50 | 1.83 | 1.05 | 1.13 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.99 | 0.00 | 0.00 |
| REC 403 | 1.86 | 1.10 | 2.52 | 0.85 | 0.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.85 | 2.25 | 1.05 | 0.88 |
| REC 451 | 0.78 | 0.00 | 0.00 | 0.00 | 2.12 | 0.00 | 0.00 | 0.00 | 2.12 | 0.00 | 0.00 | 0.00 | 1.74 | 2.11 | 1.59 |
| REC 452 | 2.38 | 1.60 | 1.23 | 1.63 | 1.19 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.58 | 0.00 | 1.66 |
| REC 453 | 2.35 | 1.57 | 0.80 | 1.62 | 1.57 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.78 | 1.60 | 1.59 |
| RCS 456 | 2.41 | 1.60 | 2.48 | 0.00 | 1.60 | 0.80 | 2.40 | 0.00 | 0.00 | 1.58 | 1.65 | 1.62 | 2.01 | 1.61 | 1.63 |
| **5th SEM** | | | | | | | | | | | | | | | |
| EC 501 | 2.56 | 1.71 | 0.79 | 1.82 | 1.61 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.57 | 0.84 | 1.61 | 1.78 |
| EC 502 | 2.60 | 2.08 | 2.05 | 0.88 | 1.69 | 0.00 | 0.00 | 0.00 | 0.00 | 1.74 | 1.69 | 0.89 | 1.75 | 1.93 | 1.30 |
| EC 503 | 0.80 | 0.00 | 0.00 | 0.00 | 1.42 | 0.00 | 0.00 | 0.00 | 0.71 | 0.00 | 0.00 | 1.42 | 2.00 | 0.81 | 0.00 |
| EC 504 | 2.68 | 1.74 | 0.90 | 1.80 | 2.71 | 0.00 | 0.00 | 0.00 | 0.00 | 1.81 | 0.00 | 1.36 | 2.67 | 1.81 | 1.33 |
| IC 501 | 2.51 | 2.18 | 1.05 | 0.88 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.83 | 0.00 | 0.00 |
| HU 501 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.11 | 0.00 | 0.00 | 1.56 | 0.00 | 2.00 | 1.56 | 2.66 | 0.00 | 1.33 |
| EC 551 | 2.68 | 2.14 | 2.63 | 0.89 | 2.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.61 | 1.77 | 0.00 |
| EC 552 | 2.61 | 1.73 | 2.65 | 0.00 | 1.75 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.18 | 1.73 | 1.75 |
| IC 551 | 2.55 | 1.43 | 0.00 | 0.00 | 2.55 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.87 | 0.00 | 1.72 |
| EC 553 | 2.64 | 0.00 | 0.00 | 0.00 | 2.37 | 0.00 | 0.00 | 0.00 | 2.37 | 0.00 | 0.00 | 0.00 | 1.95 | 2.37 | 1.78 |
| **6th SEM** | | | | | | | | | | | | | | | |
| EC 601 | 2.46 | 1.69 | 0.83 | 1.54 | 1.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.83 | 0.80 | 1.63 | 1.60 |
| EC 602 | 2.54 | 1.97 | 1.66 | 1.27 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.63 | 0.00 | 0.83 | 2.30 | 1.63 | 1.29 |
| EC 603 | 1.72 | 1.70 | 1.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.74 | 2.55 | 0.00 | 0.00 |
| EC 011 | 1.98 | 2.20 | 2.64 | 1.17 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.91 | 1.75 | 1.76 | 0.91 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC 023 | 2.45 | 2.01 | 2.03 | 2.10 | 1.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.42 | 1.69 | 1.61 |
| HU 601 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.11 | 0.00 | 0.00 | 1.56 | 0.00 | 2.00 | 1.56 | 2.66 | 0.00 | 1.33 |
| EC 651 | 2.05 | 1.72 | 0.00 | 0.00 | 2.59 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.37 | 1.73 | 1.71 |
| EC 652 | 2.65 | 1.77 | 1.80 | 1.79 | 1.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.75 | 2.10 | 1.81 |
| EC 653 | 2.43 | 1.73 | 1.76 | 1.75 | 1.74 | 0.00 | 0.00 | 0.00 | 0.89 | 0.00 | 0.00 | 0.00 | 0.86 | 2.06 | 1.79 |
| EC 654 | 0.00 | 0.00 | 0.00 | 0.90 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 | 1.85 | 0.00 | 0.00 | 1.87 | 0.00 | 1.83 |
| **7th SEM** | | | | | | | | | | | | | | | |
| OE 071 | 2.63 | 2.11 | 1.73 | 0.00 | 1.44 | 0.88 | 0.00 | 0.00 | 0.00 | 0.88 | 0.00 | 1.76 | 0.88 | 1.76 | 1.74 |
| EC 021 | 2.40 | 1.95 | 1.72 | 1.22 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.69 | 0.00 | 0.86 | 2.54 | 1.69 | 1.29 |
| EC 701 | 2.63 | 2.11 | 1.73 | 0.00 | 1.44 | 0.00 | 0.00 | 0.00 | 0.00 | 0.88 | 0.00 | 1.76 | 0.88 | 1.76 | 1.74 |
| EC 702 | 2.50 | 1.65 | 0.00 | 0.00 | 1.65 | 0.00 | 0.00 | 0.00 | 0.00 | 1.65 | 0.00 | 0.00 | 0.84 | 1.67 | 1.69 |
| EC 703 | 2.53 | 0.00 | 1.72 | 2.20 | 2.00 | 0.00 | 0.00 | 0.00 | 2.56 | 0.00 | 0.00 | 2.38 | 2.48 | 2.49 | 1.87 |
| EC 751 | 2.78 | 1.87 | 0.00 | 0.00 | 2.82 | 0.00 | 1.88 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 | 1.88 | 1.84 |
| EC 752 | 2.13 | 1.64 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.64 | 1.61 | 1.64 |
| EC 753 | 0.00 | 0.00 | 1.87 | 0.00 | 2.80 | 0.00 | 0.00 | 0.00 | 2.79 | 1.83 | 0.00 | 1.87 | 2.21 | 0.00 | 0.00 |
| EC 754 | 2.14 | 1.79 | 1.40 | 1.37 | 1.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.34 | 1.42 | 1.87 |
| **8th SEM** | | | | | | | | | | | | | | | |
| OE 081 | 2.63 | 2.11 | 1.73 | 0.00 | 1.44 | 0.88 | 0.00 | 0.00 | 0.00 | 0.88 | 0.00 | 1.76 | 0.88 | 1.76 | 1.74 |
| EC 031 | 2.43 | 1.61 | 0.00 | 0.00 | 1.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.81 | 0.00 | 0.00 |
| EC 801 | 2.49 | 1.63 | 0.84 | 1.74 | 1.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.68 | 0.83 | 1.68 | 1.65 |
| EC 802 | 2.56 | 1.69 | 0.84 | 1.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.77 | 0.00 | 1.77 | 0.83 | 1.69 | 1.74 |
| EC 851 | 1.99 | 1.68 | 1.28 | 1.29 | 1.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.27 | 1.31 | 1.69 |

Table 3.3.2.b

The over all Attainment levels to be presented through Program level Course-PO &PSO matrices as indicated

| COURSE | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | POS1 | POS2 | POS3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1ST YEAR** | | | | | | | | | | | | | | | |
| REC 201EC | 2.14 | 2.05 | 0.65 | 2.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.14 | 1.45 | 0.65 |
| **3rd SEM** | | | | | | | | | | | | | | | |
| RAS 302 | 0.00 | 0.75 | 0.90 | 0.00 | 0.00 | 0.75 | 2.24 | 0.00 | 0.00 | 0.00 | 0.00 | 1.49 | 1.60 | 1.48 | 1.56 |
| ROE 033 | 0.80 | 2.07 | 1.12 | 0.82 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.60 | 1.62 | 1.65 | 1.58 |
| ROE 038 | 0.75 | 2.26 | 1.21 | 0.78 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 2.26 | 1.46 | 1.47 | 1.43 |
| REE 305 | 2.00 | 1.58 | 2.01 | 0.65 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.04 | 1.30 | 0.00 |
| REC 301 | 1.72 | 1.60 | 2.09 | 1.40 | 1.20 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.46 | 1.47 | 1.47 | 1.40 |
| REC 302 | 2.07 | 1.45 | 1.50 | 0.71 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 1.39 | 1.36 | 0.72 |
| REC 303 | 2.02 | 1.65 | 0.66 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.65 | 1.36 | 0.87 | 0.66 |
| REC 351EC | 2.30 | 1.53 | 2.32 | 0.00 | 1.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.92 | 1.54 | 1.54 |
| REC 352EC | 2.54 | 1.82 | 1.83 | 0.33 | 1.81 | 0.00 | 0.00 | 0.00 | 0.32 | 0.00 | 0.00 | 0.00 | 0.91 | 2.13 | 1.83 |
| REC 353EC | 2.73 | 1.82 | 0.91 | 1.83 | 1.83 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.91 | 1.82 | 1.83 |
| REC 354EC | 2.29 | 1.64 | 1.65 | 1.65 | 1.64 | 0.00 | 0.00 | 0.00 | 0.83 | 0.00 | 0.00 | 0.00 | 0.82 | 1.92 | 1.65 |
| 4th SEM | | | | | | | | | | | | | | | |
| RCS 406 | 1.33 | 0.00 | 1.53 | 0.00 | 1.12 | 0.00 | 0.00 | 0.00 | 1.89 | 0.00 | 0.00 | 1.86 | 0.00 | 1.50 | 1.50 |
| RAS 401 | 0.68 | 2.03 | 1.62 | 0.68 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 1.35 | 1.30 | 1.34 | 1.37 |
| RVE 401 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.20 | 2.24 | 2.24 | 1.49 | 0.75 | 0.00 | 2.24 | 0.00 | 0.00 | 1.62 |
| REC 401 | 1.70 | 0.73 | 0.00 | 0.00 | 2.08 | 0.00 | 0.00 | 0.00 | 2.08 | 0.00 | 0.00 | 2.33 | 1.69 | 2.04 | 1.55 |
| REC 402 | 2.32 | 1.70 | 0.95 | 1.04 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.85 | 0.00 | 0.00 |
| REC 403 | 1.67 | 1.00 | 2.33 | 0.86 | 0.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 2.08 | 0.97 | 0.76 |
| REC 451EC | 0.87 | 0.00 | 0.00 | 0.00 | 2.33 | 0.00 | 0.00 | 0.00 | 2.33 | 0.00 | 0.00 | 0.00 | 1.92 | 2.33 | 1.75 |
| REC 452EC | 2.47 | 1.65 | 1.24 | 1.65 | 1.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.64 | 0.00 | 1.66 |
| REC 453EC | 2.55 | 1.70 | 0.85 | 1.71 | 1.70 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.85 | 1.71 | 1.71 |
| RCS 456EC | 2.11 | 1.41 | 2.13 | 0.00 | 1.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.76 | 1.41 | 1.41 |
| 5th SEM | | | | | | | | | | | | | | | |
| EC 501 | 2.26 | 1.52 | 0.72 | 1.52 | 1.49 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.44 | 0.75 | 1.49 | 1.55 |
| EC 502 | 2.32 | 1.84 | 1.79 | 0.77 | 1.50 | 0.00 | 0.00 | 0.00 | 0.00 | 1.56 | 1.50 | 0.79 | 1.56 | 1.71 | 1.15 |
| EC 503 | 0.74 | 0.00 | 0.00 | 0.00 | 1.37 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 0.00 | 1.37 | 1.81 | 0.70 | 0.00 |
| EC 504 | 2.32 | 1.52 | 0.71 | 1.64 | 2.13 | 0.00 | 0.00 | 0.00 | 0.00 | 1.65 | 0.00 | 1.23 | 2.29 | 1.65 | 1.16 |
| IC 501 | 2.32 | 2.01 | 0.96 | 0.77 | 0.80 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.71 | 0.00 | 0.00 |
| HU 501 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.96 | 0.00 | 0.00 | 1.32 | 0.00 | 1.71 | 1.32 | 2.31 | 0.00 | 1.14 |
| EC 551EC | 2.35 | 1.94 | 2.34 | 0.78 | 2.33 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.34 | 1.56 | 0.00 |
| EC 552EC | 2.59 | 1.73 | 2.60 | 0.00 | 1.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.16 | 1.73 | 1.73 |
| IC 551EC | 2.91 | 1.62 | 0.00 | 0.00 | 2.91 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.13 | 0.00 | 1.94 |
| EC 553EC | 2.42 | 0.00 | 0.00 | 0.00 | 2.15 | 0.00 | 0.00 | 0.00 | 1.68 | 0.00 | 0.00 | 0.00 | 1.78 | 1.68 | 1.26 |
| 6th SEM | | | | | | | | | | | | | | | |
| EC 601 | 2.34 | 1.59 | 0.79 | 1.50 | 1.54 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.76 | 0.78 | 1.57 | 1.51 |
| EC 602 | 2.18 | 1.70 | 1.41 | 1.09 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.46 | 0.00 | 0.71 | 2.00 | 1.46 | 1.10 |
| EC 603 | 1.33 | 1.30 | 1.28 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.38 | 2.02 | 0.00 | 0.00 |
| EC 011 | 1.66 | 1.81 | 2.16 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.80 | 1.47 | 1.45 | 0.80 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EC 023 | 2.21 | 1.75 | 1.74 | 1.81 | 1.36 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 2.12 | 1.47 | 1.41 |
| HU 601 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.94 | 0.00 | 0.00 | 1.29 | 0.00 | 1.65 | 1.29 | 2.26 | 0.00 | 1.10 |
| EC 651EC | 2.14 | 1.78 | 0.00 | 0.00 | 2.67 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.42 | 1.78 | 1.78 |
| EC 652EC | 2.77 | 1.85 | 1.85 | 1.85 | 1.85 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.84 | 2.16 | 1.86 |
| EC 653EC | 2.09 | 1.49 | 1.50 | 1.49 | 1.49 | 0.00 | 0.00 | 0.00 | 0.75 | 0.00 | 0.00 | 0.00 | 0.74 | 1.75 | 1.50 |
| EC 654EC | 0.00 | 0.00 | 0.00 | 0.94 | 0.00 | 0.00 | 0.00 | 0.00 | 1.88 | 1.88 | 0.00 | 0.00 | 1.89 | 0.00 | 1.88 |
| 7th SEM | | | | | | | | | | | | | | | |
| OE 072 | 2.21 | 1.77 | 1.52 | 0.00 | 1.25 | 0.72 | 0.00 | 0.00 | 0.00 | 0.76 | 0.00 | 1.51 | 0.74 | 1.47 | 1.43 |
| EC 021 | 1.87 | 1.55 | 1.34 | 0.98 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.27 | 0.00 | 0.67 | 1.98 | 1.27 | 1.02 |
| EC 701 | 2.08 | 1.66 | 1.35 | 0.00 | 1.12 | 0.00 | 0.00 | 0.00 | 0.00 | 0.68 | 0.00 | 1.36 | 0.70 | 1.36 | 1.44 |
| EC 702 | 2.04 | 1.26 | 0.00 | 0.00 | 1.26 | 0.00 | 0.00 | 0.00 | 0.00 | 1.29 | 0.00 | 0.00 | 0.64 | 1.25 | 1.28 |
| EC 703 | 2.08 | 0.00 | 1.35 | 1.69 | 2.00 | 0.00 | 0.00 | 0.00 | 1.91 | 0.00 | 0.00 | 1.85 | 2.01 | 1.93 | 1.48 |
| EC 751EC | 2.20 | 1.47 | 0.00 | 0.00 | 2.21 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.47 | 1.47 | 1.46 |
| EC 752EC | 2.25 | 1.73 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.73 | 1.73 | 1.74 |
| EC 753EC | 0.00 | 0.00 | 1.93 | 0.00 | 2.90 | 0.00 | 0.00 | 0.00 | 2.90 | 1.92 | 0.00 | 1.93 | 2.31 | 0.00 | 0.00 |
| EC 754EC | 1.17 | 0.99 | 0.76 | 0.75 | 0.76 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.75 | 0.76 | 1.01 |
| 8th SEM | | | | | | | | | | | | | | | |
| OE 081 | 2.41 | 1.92 | 1.60 | 0.00 | 1.33 | 0.80 | 0.00 | 0.00 | 0.00 | 0.80 | 0.00 | 1.60 | 0.80 | 1.60 | 1.60 |
| EC 031 | 1.93 | 1.29 | 0.00 | 0.00 | 1.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.93 | 0.66 | 0.95 | 1.05 |
| EC 801 | 1.95 | 1.28 | 0.62 | 1.40 | 1.29 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.24 | 0.65 | 1.26 | 1.32 |
| EC 802 | 1.92 | 1.23 | 0.62 | 1.30 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 1.32 | 0.00 | 1.32 | 0.61 | 1.23 | 1.32 |
| EC 851EC | 1.52 | 1.30 | 0.98 | 0.98 | 0.97 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.98 | 0.99 | 1.30 |
| Total | 99.67 | 73.36 | 59.45 | 38.42 | 58.37 | 5.36 | 4.48 | 2.24 | 22.79 | 15.34 | 4.86 | 40.23 | 82.13 | 69.17 | 68.50 |
| Average | 1.99 | 1.59 | 1.42 | 1.20 | 1.62 | 0.89 | 2.24 | 2.24 | 1.42 | 1.28 | 1.62 | 1.34 | 1.52 | 1.50 | 1.40 |

Table.3.3.2c

STUDENT'S PERFORMANCE

| **CRITERION4** | **STUDENT'S PERFORMANCE** | 100 |
|---|---|---|

| **Item (Information to beprovided cumulatively for all the shifts with explicit headings, wherever applicable)** | **CAY (2018-19)** | **CAYm1 (2017-18)** | **CAYm2 (2016-17)** |
|---|---|---|---|
| Sanctioned intake of the program (*N*) | 60 | 60 | 60 |
| 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 (*N*1) | 62 | 62 | 60 |
| Number of students admitted in 2nd year in the same batch via lateral entry (*N*2) | 12 | 12 | 12 |
| Separate division students, if applicable (N3) | | 0 | 0 |
| Total number of students admitted in the Program (*N*1+*N*2+ N3) | 74 | 74 | 72 |

Table4a

**CAY– CurrentAcademicYear**
**CAYm1-Current Academic Year minus 1 = Current Assessment Year**
**CAYm2- Current Academic Year minus 2 = Current Assessment Year minus 1**
**CAYm3-Current Academic Year minus 3 = Current Assessment Yearminus 3**
**LYG– Last Year Graduate**
**LYGm1– Last Year Graduate minus 1**
**LYGm2– Last Year Graduate minus 2**

| | | Number of students who have successfully graduated **without backlogs** in any semester/yearof study (Without Backlog means no compartment or failures in any semester/year of study) | | | |
|---|---|---|---|---|---|
| Year of Entry | N1+N2+N3 (As defined above) | IYear | IIYear | IIIYear | IVYear |
| CAY (2018-19) | 62 | 55 | | | |
| CAYm1 (2017-18) | 74 | 53 | 34 | | |
| CAYm2 (2016-17) | 72 | 48 | 42 | 39 | |
| CAYm3 (2015-16) | 60 | 38 | 40 | 39 | 39 |
| CAYm4 (LGY) (2014-15) | 61 | 34 | 43 | 42 | 42 |
| CAYm5(LYGm 1) (2013-14) | 65 | 44 | 51 | 46 | 46 |
| CAYm6(LYGm 2) (2012-13) | 65 | 39 | 42 | 42 | 42 |

Table4b

STUDENT'S PERFORMANCE

| Year of Entry | *N*1+*N*2+N3 (As defined above) | Numberof students who have successfully graduated with backlogs **in stipulated period of study** in any semester/year of study | | | |
|---|---|---|---|---|---|
| | | IYear | IIYear | IIIYear | IVYear |
| CAY (2018-19) | 62 | 62 | | | |
| CAYm1 (2017-18) | 74 | 61 | 69 | | |
| CAYm2 (2016-17) | 72 | 59 | 68 | 68 | |
| CAYm3 (2015-16) | 60 | 50 | 60 | 60 | 57 |
| CAYm4 (LGY) (2014-15) | 61 | 42 | 58 | 58 | 52 |
| CAYm5(LYGm1) (2013-14) | 65 | 48 | 63 | 62 | 60 |
| CAYm6(LYGm2) (2012-13) | 65 | 52 | 65 | 65 | 64 |

Table 4c

4.1. **Enrolment Ratio (20)**

Enrolment Ratio=N1/N

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

Table4.1a

| Year of Entry | N | N1 | Enrollment Ratio[(N1/N)*100] |
|---|---|---|---|
| CAY 2018-2019 | 60 | 62 | 100 |
| CAYm1 2017-2018 | 60 | 62 | 100 |
| CAYm2 2016-2017 | 60 | 60 | 100 |
| Average [ (ER1 + ER2 + ER3) / 3 ] : 98.88% Assessment | | | 98.88% Assessment :20.00 |

Table 4.1b

STUDENT'S PERFORMANCE

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

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

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

*Average SI=Mean of Success Index (SI) for past three batches*
*Success rate without backlogs in anysemester/year of study= **15×AverageSI***

| Item | Last Year Graduate, LYG (CAYm4) | Last Year Graduate minus 1, LYGm1 (CAYm5) | Last Year Graduate minus 2, LYGm2 (CAYm6) |
|---|---|---|---|
| Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable | 61 | 65 | 65 |
| Number of students who have graduated without backlogs in the stipulated period | 42 | 46 | 42 |
| Success Index (SI) | 0.70 | 0.73 | 0.65 |
| Assessment [15 * Average SI] | 10 | | |

Table4.2.1

### 4.2.2. Success rate withbacklog in stipulated period of study (5)

SI = (Number of students who graduated from the program in the stipulated period of course duration)/(Number of students admitted in the first year of that batch and admitted in 2nd year via lateral entry and separate division, if applicable)
Average SI=mean of Success Index (SI) for past three batches
Success rate= 5× Average SI

| Item | Last Year Graduate, LYG CAYm4) | Last Year Graduate minus1, LYGm1 (CAYm5) | Last Year Graduate minus2, LYGm2 (CAYm6) |
|---|---|---|---|
| Number of students admitted in the corresponding First Year + admitted in 2nd year via lateral entry and separate division, if applicable | 61 | 65 | 65 |
| Number of students who have graduated with backlogs in the stipulated period | 52 | 60 | 64 |
| SuccessIndex(SI) | 0..85 | 0.92 | 0.98 |
| Average SI[ ( SI1 + SI2 + SI3) / 3 ] | 0.93 | | |
| Assessment [5 * Average SI] | 4.65 | | |

Table .4.2.2

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

## 4.3. Academic Performance in Second Year (10)

*Academic Performance = Average API (Academic Performance Index), where*
***API** = ((Mean of 2nd Year Grade Point Average of all successful Students on a10point scale) or (Mean of the percentage of marks of all successful students in Second Year / 10)) x (number of successful students/number of students appeared in the examination)*

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

| **Academic Performance** | CAYm1 2017-18 | CAYm2 2016-2017 | CAYm3 2015-2016 |
|---|---|---|---|
| Mean of CGPA or mean percentage of all successful students(X) | 7.1 | 6.83 | 6.87 |
| Total number of successful students(Y) | 68 | 68 | 60 |
| Total number of students appeared in the examination(Z) | 69 | 68 | 60 |
| API = X * (Y/Z) | 6.99 | 6.83 | 6.87 |
| Average API [ (AP1 + AP2 + AP3)/3] | 6.89 | | |

Table 4.3

## 4.4. Placement, Higher Studies and Entrepreneurship (30)

| Item | CAYm1 2018-2019 | CAYm1 2017-2018 | CAYm2 2016-2017 | CAYm3 2015-2016 |
|---|---|---|---|---|
| Total No of Final Year Students(N) | 60 | 58 | 63 | 65 |
| No of students placed in the companies or government sector(X) | 13 | 29 | 31 | 53 |
| No of students admitted to higher studies with valid qualifying scores (GATE or equivalent State or National Level tests, GRE, GMAT etc.) (Y) | 32 | 20 | 08 | 08 |
| No of students turned entrepreneur in engineering/technology (Z) | 01 | 0 | 0 | 01 |
| x + y + z = | 46 | 49 | 57 | 62 |
| Placement Index [ (X+Y+Z)/N | 0.77 | 0.87 | 0.49 | 0.95 |
| Average Placement=[P1+P2+P3+P4]/3 | 0.87 | | | |
| Assessment Points=30x Average Placement | 21 | | | |

Table 4.4

STUDENT'S PERFORMANCE

# PLACEMENT SUMMARY

| S.no. | Session | Company name | No. of student placed |
|---|---|---|---|
| 1. | 2018-19 (In-Campus Data ) | TCS DIGITAL | 01 |
| 2 | | TCS NQT (National Qualifying Test) | 14 |
| 3. | | MATRIXCARE | 01 |
| 4 | | AMPERES TECHNOLOGY | 02 |
| 5 | 2018-19 (Off-Campus Data ) | XPOGG LOG TECHNOLOGY | 01 |
| 6 | | NEC TECHNOLOGY | 02 |

# STUDENTS PURSUING HIGHER STUDIES

| S.No. | Session | Course pursued | No. of student |
|---|---|---|---|
| 1 | 2018-19 | M.TECH | 03 |
| 2 | | MBA | 05 |

| S.No. | Number Of Students Applied | Qualified | Not Qualified |
|---|---|---|---|
| 1 | 37 | 29 | 08 |

# GATE 2019 DETAILS

# ENTREPRENEUR DETAILS

| S.No. | Name | Company | Designation | Website |
|---|---|---|---|---|
| 1. | Raj Gupta | Fixit2day | Cofounder &CEO | www.Fix2day.in |

# STUDENT'S PERFORMANCE

| S.NO | NAME OF STUDENTS | SPECIALIZATION | COMPANY/HIGHER STUDIES |
|---|---|---|---|
| 1. | ADITYA TEWARI | Electronics and Communication | FUNCTIONAL VERIFICATION TRAINEE |
| 2. | AMIT KUMAR | Electronics and Communication | XPOGG LOG TECHNOLOGY |
| 3. | ANKUR SINGH | Electronics and Communication | TCS NQT |
| 4. | ARPIT TAYAL | Electronics and Communication | TCS NQT/NEC TECHNOLOGY |
| 5. | ASHISH KUMAR RAIKWAR | Electronics and Communication | AMPERES ENERGY |
| 6. | ASHUTOSH DWIVEDI | Electronics and Communication | MATRIXCARE |
| 7. | AYUSH DEEP SINGH | Electronics and Communication | TCS NQT |
| 8. | BRIJ NANDAN SINGH | Electronics and Communication | TCS NQT |
| 9. | VINY SHARMA | Electronics and Communication | MBA(IIM INDORE) |
| 10. | HARSHIT SRIVASTAVA | Electronics and Communication | TCS NQT |
| 11. | KAUSHLENDRA SINGH YADAV | Electronics and Communication | TCS NQT |
| 12. | PALAK AGARWAL | Electronics and Communication | TCS NQT/ M.TECH (NIT WARANGAL) |
| 13. | PRANSHU PATEL | Electronics and Communication | TCS NQT/NEC TECNOLOGY |
| 14. | RAHUL GOLA | Electronics and Communication | TCS NQT/AMPERE ENERGY |
| 15. | SHAILENDRA CHAUDHARY | Electronics and Communication | MBA(NITIE MUMBAI) |
| 16. | SHIVAM MISHRA | Electronics and Communication | TCS NQT |
| 17. | SHRETIKA JAIN | Electronics and Communication | M.TECH.(IISC BANGALORE) |

| | | | |
|---|---|---|---|
| 18. | SHREYA SINGH | Electronics and Communication | TCS NQT |
| 19. | SHUBHAM YADAV | Electronics and Communication | MBA(IIM KOZHIKODE)/TCS NQT |
| 20. | SHUBHI SINGH | Electronics and Communication | TCS DIGITAL HIRING |
| 21. | SOURABH SINGH | Electronics and Communication | TCS NQT |
| 22. | SUJATA GUPTA | Electronics and Communication | ELITMUS |
| 23. | TANYA YADAV | Electronics and Communication | TCS NQT/MBA(IIM KOZHIKODE) |
| 24. | CHANDAN JAISWAL | Electronics and Communication | M.TECH (NIT WARANGAL) |

STUDENT'S PERFORMANCE

## PLACEMENT SUMMARY

| S.No. | Session | Company | No. Of Students Placed |
|---|---|---|---|
| 1 | 2017-18 (In-campus) | TCS | 17 |
| 2 | | ZIA Semiconductors | 04 |
| 3 | | WIPRO | 01 |
| 4 | | BEL | 01 |
| 5 | | LAVA | 02 |
| 6 | 2017-18 (off-campus) | GITA CLOUD | 01 |
| 7 | | Planetworx software engg. | 02 |
| 8 | | Reliance communication ltd. | 01 |
| 9 | | EBIX software | 01 |
| 10 | 2017-18 (PSU data) | NTPC | 02 |
| 11 | | UPPCL | 01 |
| 12 | | BEL | 01 |
| 13 | | ECIL | 01 |
| | | | |
| 14 | | Ministry of Communication | 01 |

## STUDENTS PURSUING HIGHER STUDIES

| S.No. | Session | Course pursued | Number of students |
|---|---|---|---|
| 1 | 2017-18 | M.TECH | 07 |
| 2 | 2017-18 | MBA | 03 |

## GATE 2018 DETAILS

| S.No. | NUMBER OF STUDENTS APPLIED | QUALIFIED | NOT QUALIFIED |
|---|---|---|---|
| 1 | 21 | 20 | 1 |

# STUDENT'S PERFORMANCE

| S.NO | NAME OF STUDENTS | SPECIALIZATION | COMPANY/HIGHER STUDIES |
|---|---|---|---|
| 1. | SHIVAM GUPTA | Electronics and Communication | ECIL |
| 2. | ABHISHEK KUMAR | Electronics and Communication | NTPC |
| 3. | AKANSHA VERMA | Electronics and Communication | INDIA MART (ASP) |
| 4. | AKASH VERMA | Electronics and Communication | LAVA/GITA CLOUD |
| 5. | AMAN GUPTA | Electronics and Communication | M.TECH (IIT DELHI) |
| 6. | CHITRANSHU MISHRA | Electronics and Communication | TCS |
| 7. | DEVESH SHUKLA | Electronics and Communication | TCS/ZIA SEMICONDUCTOR |
| 8. | DHARMENDRA KUMAR SINGH | Electronics and Communication | UPPCL |
| 9. | DIVYANSH | Electronics and Communication | M.TECH |
| 10. | KRISHNA KUMAR | Electronics and Communication | MBA(IIM) |
| 11. | LOKENDRA KUMAR | Electronics and Communication | TCS |
| 12. | MANISH SACHAN | Electronics and Communication | WIPRO |
| 13. | NEELANSHU VARSHNEY | Electronics and Communication | TCS/M.TECH (BITS PILANI) |
| 14. | NEELIKA | Electronics and Communication | MBA(IIM LUCKNOW) |
| 15. | TAZEEN FATIMA | Electronics and Communication | EBIX SOFTWARE |
| 16. | PRAVEEN SAHU | Electronics and Communication | MINISTRY OF COMMUNICATION |
| 17. | PRIYADARSHINI DWIVEDI | Electronics and Communication | IIT KANPUR (PHD) |
| 18. | PRIYANK SRIVASTAVA | Electronics and Communication | IIM KOLKATA |
| 19. | RAJAT CHAWLA | Electronics and Communication | TCS/M.TECH (IIT MADRAS) |
| 20. | SAH SWAPNIL AGRAWAL | Electronics and Communication | TCS/ZIA SEMICONDUCTOR /M.TECH (IIT DELHI) |
| 21. | SAURABH KUMAR | Electronics and Communication | PLANETWORX SOFTWARE ENG. |
| 22. | SAURABH KUMAR | Electronics and Communication | PLANETWORX SOFTWARE ENG. |
| 23. | MADHURI KUMARI | Electronics and Communication | ENTREPRENEUR |

| | | | |
|---|---|---|---|
| 24. | SHIKHA TIWARI | Electronics and Communication | TCS |
| 25. | SHIVANGI GUPTA | Electronics and Communication | TECH MEHINDRA |
| 26. | SHREYA MISHRA | Electronics and Communication | TCS |
| 27. | SHUBHAM JAIN | Electronics and Communication | TCS |
| 28. | ABHISHEK TRIVEDI | Electronics and Communication | TCS/NTPC |
| 29. | VIDUSHI SAXENA | Electronics and Communication | TCS/MBA(MDI GURGAON) |
| 30. | VIJAY KUMAR YADAV | Electronics and Communication | TCS |
| 31. | VISHAD SAXENA | Electronics and Communication | TCS |
| 32. | YASH MISHRA | Electronics and Communication | M.TECH (IIT KANPUR) |
| 33. | AYUSH TRIPATHI | Electronics and Communication | TCS/ZIA SEMICONDUCTOR/BEL |
| 34. | PARAS JAIN | Electronics and Communication | TCS/LAVA |
| 35. | SHUBHI DIXIT | Electronics and Communication | TCS |
| 36. | SHWETA KUMARI | Electronics and Communication | TCS/ZIA SEMICONDUCTOR /M.TECH (IIT KANPUR) |
| 37. | MO ASHIF ALI | Electronics and Communication | RELIANCE COMMUNICATION LTD. |

STUDENT'S PERFORMANCE

## PLACEMENT SUMMARY

| S.No. | Session | Company | No. of student placed |
|---|---|---|---|
| 1 | 2016-17 (In-campus data) | TCS | 12 |
| 2 | | WIPRO | 05 |
| 3 | | EXIMIUS Design | 14 |
| 4 | | BEL | 03 |
| 5 | 2016-17 (off-campus data) | MERCHANT NAVY | 01 |
| 6 | | QUALCOMM | 02 |
| 7 | | INTEL | 01 |
| 8 | | GLOBAL LOGIC | 01 |
| 9 | | NEWGEN | 01 |
| 10 | | NTRO | 01 |
| 11 | 2016-17 (PSU data) | BEL | 03 |
| 12 | | Railways | 01 |
| 13 | | DMRC | 01 |
| 14 | | NTPC | 01 |
| 15 | | DRDO | 01 |
| 16 | | AAI | 01 |

## STUDENTS PURSUING HIGHER STUDIES

| S.No. | Session | Course Pursued | No. Of Student |
|---|---|---|---|
| 1 | 2016-17 | M.TECH | 7 |
| 2 | 2016-17 | MBA | 1 |

## GATE 2017 DETAILS

| S.No. | Number Of Students Applied | Qualified | Not Qualified |
|---|---|---|---|
| 1 | 24 | 22 | 2 |

STUDENT'S PERFORMANCE

## PLACEMENT DETAIL

| S.NO | NAME OF STUDENTS | SPECIALIZATION | COMPANY/HIGHER STUDIES |
|---|---|---|---|
| 1. | PREETIKA AGARWAL | Electronics and Communication | TCS |
| 2. | ABHINESH MISHRA | Electronics and Communication | MERCHANT NAVY |
| 3. | ABHISHEK KUMAR | Electronics and Communication | M.TECH(IIT KANPUR) |
| 4. | SHIVAM SHRIVASTAVA | Electronics and Communication | M.TECH.(IIT KANPUR) |
| 5. | AMAN GUPTA | Electronics and Communication | BEL/EXIMIUS DESIGN |
| 6. | AMIT KUMAR UPADHYAY | Electronics and Communication | TCS/QUALCOMM |
| 7. | ANISH KUMAR JAIN | Electronics and Communication | WIPRO |
| 8. | ANSHUL BHADOURIA | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 9. | ANUBHAV | Electronics and Communication | QUALCOMM |
| 10. | ANUPAMA VERMA | Electronics and Communication | M.TECH.(IISC BANGALORE) |
| 11. | ANURAG NIGAM | Electronics and Communication | INTEL |
| 12. | ASHOK KUMAR | Electronics and Communication | M.TECH.(NIT ALLAHABAD) |
| 13. | SONKAMAL DEEP | Electronics and Communication | NTRO |
| 14. | CHARU AGARWAL | Electronics and Communication | EXIMIUS DESIGN |
| 15. | DEEPESH KUMAR DUBEY | Electronics and Communication | RAILWAY |
| 16. | DEVANSHIKA TRIPATHI | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 17. | DIBYA PRAKASH KUSHWAHA | Electronics and Communication | WIPRO/EXIMIUS DESIGN |
| 18. | HIMANSHI JAISWAL | Electronics and Communication | GLOBAL LOGIC |
| 19. | JAGJIT SINGH | Electronics and Communication | TCS/BEL/EXIMIUS DESIGN |
| 20. | KANISHK GOEL | Electronics and Communication | TCS |
| 21. | MANISH TRIGUN | Electronics and Communication | M.TECH.(IIT MANDI) |
| 22. | MANOJ SINGH | Electronics and Communication | EXIMIUS DESIGN |
| 23. | MEGHA AGRAWAL | Electronics and Communication | WIPRO/EXIMIUS DESIGN |
| 24. | SHILENDRA KUMAR | Electronics and Communication | AAI |

| | | | |
|---|---|---|---|
| 25. | NEETI AGARWAL | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 26. | PRASHANT KUMAR YADAV | Electronics and Communication | MBA(IIM) |
| 27. | PRATEEK CHANDRA TRIPATHI | Electronics and Communication | WIPRO |
| 28. | RAM BABU GUPTA | Electronics and Communication | DMRC |
| 29. | SAIFUL HAQ | Electronics and Communication | M.TECH.(IIT KHARAGPUR) |
| 30. | SAMRIDDHI TIWARI | Electronics and Communication | TCS |
| 31. | SHIVAM SRIVASTAVA | Electronics and Communication | NTPC |
| 32. | SRISHTI DEHAL | Electronics and Communication | WIPRO |
| 33. | SUYASH VARDHAN SINGH | Electronics and Communication | M.S.(UNIVERSITY OF CALIFORNIA) |
| 34. | UDIT KHANDELWAL | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 35. | UTKARSH SHARMA | Electronics and Communication | EXIMIUS DESIGN |
| 36. | VAIBHAV NIGAM | Electronics and Communication | M.TECH.(IIT DELHI) |
| 37. | VIPIN KUMAR VERMA | Electronics and Communication | TCS |
| 38. | VISHAL MALIK | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 39. | VIVEK KUMAR SINGH | Electronics and Communication | BEL/EXIMIUS DESIGN |
| 40. | SAKSHI GARG | Electronics and Communication | TCS/EXIMIUS DESIGN |
| 41. | AMAR NATH | Electronics and Communication | DRDO |

STUDENT'S PERFORMANCE

## PLACEMENT SUMMARY

| S.No. | Session | Company | No. of students placed |
|---|---|---|---|
| 1 | 2015-16 (In-campus) | TCS | 22 |
| 2 | | LAVA | 03 |
| 3 | | BEL | 04 |
| 4 | | WIPRO | 07 |
| 5 | 2015-16 (off-campus) | MEDIATEK | 01 |
| 6 | | METLIFE | 01 |
| 7 | | QUALCOMM | 01 |
| 8 | | AMDOCS | 01 |
| 9 | | ENTREPRENEUR | 01 |
| 10 | 2015-16 (PSU data) | MEITY | 01 |
| 11 | | UPPCL | 02 |
| 12 | | BEL | 04 |
| 13 | | BSNL | 07 |
| 14 | | UPJVN | 01 |
| 15 | | UP POLICE | 01 |
| 16 | | DFCCIL | 01 |
| 17 | | ISRO | 01 |
| 18 | | INCOM TAX(SSC) | 01 |
| 19 | | RAILWAY | 01 |

## STUDENTS PURSUING HIGHER STUDIES

| S.No. | Session | Course pursued | |
|---|---|---|---|
| 1 | 2015-16 | M.TECH | 04 |
| 2 | 2015-16 | MBA | 04 |

## GATE 2016 DETAILS

| S.No. | Number Of Students Applied | Qualified | Not Qualified |
|---|---|---|---|
| 1 | 22 | 20 | 02 |

## ENTREPRENEUR DETAILS

| S.No. | Name | Company | Designation | Website |
|---|---|---|---|---|
| 1. | Aman Srivastava | Yourclasses | Co-Founder | www.yourclasses.in |

STUDENT'S PERFORMANCE

## PLACEMENT DETAIL

| S.NO | NAME OF THE STUDENTS | SPECIALIZATION | COMPANY |
|---|---|---|---|
| 1 | YASHASWI CHAURASIA | ELECTRONIC & COMMUNICATION | TCS/MEITY |
| 2 | SWATI VERMA | ELECTRONIC & COMMUNICATION | TCS |
| 3 | BHARAT GIRDHAR | ELECTRONIC & COMMUNICATION | TCS |
| 4 | PRIYA SAHNI | ELECTRONIC & COMMUNICATION | TCS |
| 5 | NIKHIL ANAND | ELECTRONIC & COMMUNICATION | TCS |
| 6 | PRATEEK CHOPRA | ELECTRONIC & COMMUNICATION | TCS |
| 7 | ANKIT YADAV | ELECTRONIC & COMMUNICATION | TCS |
| 8 | PULAK VERMAN | ELECTRONIC & COMMUNICATION | TCS/BEL |
| 9 | AMAN DEOL | ELECTRONIC & COMMUNICATION | TCS |
| 10 | DIPESH GEOL | ELECTRONIC & COMMUNICATION | TCS/LAVA/BEL |
| 11 | AJAY SINGH | ELECTRONIC & COMMUNICATION | TCS/LAVA |
| 12 | CHETAN SINGH | ELECTRONIC & COMMUNICATION | TCS |
| 13 | TRAPTI VARSHNEY | ELECTRONIC & COMMUNICATION | TCS |
| 14 | NEELU CHOUDHARY | ELECTRONIC & COMMUNICATION | TCS |
| 15 | SAURABH PANDEY | ELECTRONIC & COMMUNICATION | TCS |
| 16 | SATYAM VISHWAKARMA | ELECTRONIC & COMMUNICATION | TCS |
| 17 | PRAKHAR AGRAWAL | ELECTRONIC & COMMUNICATION | TCS |
| 18 | ANKIT DIXIT | ELECTRONIC & COMMUNICATION | TCS |
| 19 | LALIT SINGH | ELECTRONIC & COMMUNICATION | TCS/BSNL |
| 20 | BAISHNAV KUMAR | ELECTRONIC & COMMUNICATION | UPPCL |
| 21 | SMRITI GUPTA | ELECTRONIC & COMMUNICATION | MEDIATEK |
| 22 | HARSHITA JAISWAL | ELECTRONIC & COMMUNICATION | WIPRO |

STUDENT'S PERFORMANCE

| | | | |
|---|---|---|---|
| 23 | RAM TEERATH | ELECTRONIC & COMMUNICATION | UPPCL |
| 24 | MUKESH KUMAR RAJ | ELECTRONIC & COMMUNICATION | TCS |
| 25 | MANOJ MEHROTRA | ELECTRONIC & COMMUNICATION | TCS |
| 26 | MANVENDRA SINGH | ELECTRONIC & COMMUNICATION | WIPRO/BSNL |
| 27 | SUMIT KUMAR PANDEY | ELECTRONIC & COMMUNICATION | BEL/BSNL |
| 29 | MANIKANT | ELECTRONIC & COMMUNICATION | BSNL |
| 30 | VIKAS YADAV | ELECTRONIC & COMMUNICATION | BEL |
| 31 | ZEESHAN SARWAR | ELECTRONIC & COMMUNICATION | MBA(IIFT) |
| 32 | KAUSTABH MANI GAUR | ELECTRONIC & COMMUNICATION | BSNL |
| 34 | AJAY KUMAR | ELECTRONIC & COMMUNICATION | UP POLICE |
| 35 | VIJAY PRATAP SINGH | ELECTRONIC & COMMUNICATION | BSNL |
| 36 | PRAKHAR AATRE | ELECTRONIC & COMMUNICATION | METLIFE |
| 37 | RAM NARESH YADAV | ELECTRONIC & COMMUNICATION | UPJVN |
| 38 | SHAILESH KUMAR | ELECTRONIC & COMMUNICATION | DFCCIL |
| 39 | SHANTANU SRIVASTAVA | ELECTRONIC & COMMUNICATION | WIPRO/ISRO |
| 42 | ROHIT KUMAR YADAV | ELECTRONIC & COMMUNICATION | BSNL |
| 43 | SHIVAM KUMAR | ELECTRONIC & COMMUNICATION | MBA(IIM) |
| 44 | MEGHA GAUTAM | ELECTRONIC & COMMUNICATION | WIPRO |
| 47 | AJAY VIKRAM SINGH | ELECTRONIC & COMMUNICATION | M.TECH.(IIT DELHI) |

| | | | |
|---|---|---|---|
| 48 | SWADHA SIDDHI CHAUHAN | ELECTRONIC & COMMUNICATION | TCS/QUALCOMM/LAVA |
| 49 | SWAPNIL GAUTAM | ELECTRONIC & COMMUNICATION | WIPRO |
| 50 | DILSHAD ALI | ELECTRONIC & COMMUNICATION | MBA(IIM BANGALORE) |
| 51 | SHOBHIT KUMAR | ELECTRONIC & COMMUNICATION | INCOME TAX(SSC) |
| 52 | NAMIT SARASWAT | ELECTRONIC & COMMUNICATION | WIPRO/AMDOCS |
| 53 | PRIYA SAHNI | ELECTRONIC & COMMUNICATION | MBA(IIM INDORE) |
| 54 | KM.SHWETA | ELECTRONIC & COMMUNICATION | M.TECH.(IIT BHU) |
| 55 | DHEERAJ YADAV | ELECTRONIC & COMMUNICATION | RAILWAY |
| 56 | AMAN SRIVASTAVA | ELECTRONIC & COMMUNICATION | ENTREPRENEUR |
| 57 | SUDHANSHU SRIVASTAVA | ELECTRONIC & COMMUNICATION | WIPRO/M.TECH.(MANIPAL UNIVERSITY) |
| 58 | KM.NAINA GUPTA | ELECTRONIC & COMMUNICATION | M.TECH.(NIT KURUKSHETRA) |

## 4.5. Professional Activities (20)

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

**SEED (SOCIETY FOR ELECTRONICS EXPLORATION & DEVELOPEMENT):Activities by SEED: Different activities have been held with the help of department as follows**

1. SEED conducted General Body Meeting of IET Lucknow Alumni Association on 31st May 2009 which was a landmark in the history of IET.
2. IETE Lucknow Chapter conducted technical paper presentation on 'ICT-A Powerful Education Enabler' in collaboration with SEED.
3. ANKURAN:- To enhance the technical and practical skills of budding engineers ,SEED organizes a series of techno events every year in collaboration with various prestigious educational organizations.
4. PALLAV:- SEED organizes an official get together in which first year interacts with rest of Electronic Engineering department.

| S.No | Name of the Event | Organized under |
|---|---|---|
| **1** | PALLAV | SEED |
| **2** | TEACHERS DAYS CELEBRATION | SEED |
| 3 | ANKURAN | SEED |
| 4 | MERITORIES STUDENT CELEBRATION | SEED |


1. Organised National Conference "Emerging Trends in Electrical & Electronics Engineering (NCETEEE'16), by Department of Electronics & Communication Engineering & Department of Electrical Engineering Institute of Engineering & Technology, Lucknow, 19-20 August, 2016.

4.5.2. Publication of technical magazines, newsletters, etc. (5)
News letter published annually and circulated among faculty and students. It is also posted on the Institute website.

The Editorial Board Includes:

Chief Editor: Prof. V.K Singh, Professor, ECEDept.,
Editor: Dr. Rajiv Kr Singh, Assistant Professor, ECEDept.,

4.5.3. Participation in inter-institute events by students of the program of study (10)
(The Department shall provide at able indicating those publications, which received awards in the events/ conferences organized by other institutes.)

**STUDENTS PAPER PRESENTATION**

| Roll No. | Student Name | Tournament/Event Name | Event Type | Held At | Organised By | Date /Year | Post/Result |
|---|---|---|---|---|---|---|---|
| 1505231047 | Sujata Gupta | Tech Paper Presentation | Technical | Outside Campus | IETE | 2016 | Participated |
| 1605251034 | Radha Agarwal | Parakram | Technical | In campus | I.E.T | 2017 | Second |

**ROBITICS CLUB:** Established in 2017. Total 6 faculty advisors from various Deptt.. Total 6 mentors from final year students.17 third year students and 78 second year students. Conducted major events successfully under Parakram 2k16, Parakram 2k17 and Ankuran 2k17. Imparting robotics knowledge through workshops since 3 years to IET students.

**IEEE STUDENTS' CHAPTER:** IEEE student chapter was established on 4th September 2003 with the branch code 2562961.Member benefits include access to a multitude of research papers, journals and magazines related to various technical fields like computer science, electrical and electronics engineering, biotechnology, information technology, aerospace, etc.On 4th September 2003 a petition was forwarded to the IEEE for inauguration with Ms. Pallawi Gupta as the Chairperson and the branch was registered with the IEEE in January 2004 with the branch code 2562961.The primary goal of the students' chapter is to create awareness with regard to the latest trends in the field of technological innovation. The association with a global engineers' body like the IEEE shall open up new unexplored horizons to the budding engineers.**Student Chapter for the year 2012 was called as golden chapter.**

RECENT ACTIVITIES: INTERNATIONAL CONFERENCE TECHNICALLY SUPPORTED BY IEEE

International Conference on Defense and Space Technologies, 2019 was organized as a 3 day affair from 23$^{rd}$ to 25$^{th}$ of August 2019 at Institute of Engineering and Technology, Lucknow.The inaugural session included lamp lighting by the Chief Guest, Honorable Vice Chancellor (AKTU) Prof.Vinay Kumar Pathak. Other guests of honor included Prof. Y. N Singh and Prof. S.N Singh

from IIT Kanpur, Prof K.T.V Reddy from IETE, New Delhi and IET's Director Dr.H.K. Paliwal.After the felicitation of the guests and dignitaries by presenting a bouquet, the audience witnessed address from the Invited speakers.

ICDST -2019 is supported by TEQIP-3 and technically co-sponsored by IEEE-UP Section. The convener of the conference was Dr.R.C.S. Chauhan of Electronics Department, IET Lucknow.

**CURRENT MEMBERS OF IEEE STUDENT CHAPTER AT IET LUCKNOW**

| S.No. | NAME | DESIGNATION | Member ID |
|---|---|---|---|
| **1.** | DR. R.C.S. CHAUHAN | BRANCH COUNSELOR | 90660271 |
| **2.** | GAYATRI TIWARI | CHAIRPERSON | 96067404 |
| 3. | ANUM KHAN | TREASURER | 96067640 |
| **4.** | VINAY | MEMBER | 94392749 |
| **5.** | JITENDRA SHUKLA | MEMBER | 93384195 |
| **6.** | SONMATI VERMA | MEMBER | 96070793 |
| **7.** | VIVEK MISHRA | MEMBER | 95756239 |
| **8.** | AMIT VERMA | MEMBER | 96067375 |
| **9.** | NIDHI SHRIVASTAVA | MEMBER | 96066138 |
| **10.** | SEMBA SWAMI | MEMBER | 96067336 |
| **11.** | RICHA | MEMBER | 96065186 |
| **12.** | SWETA TRIPATHI | MEMBER | 95600156 |
| **13.** | PRIYANKA BHARTI | MEMBER | 96067395 |
| **14.** | RAHUL SINGH | MEMBER | 96067477 |
| **15.** | JITESH SINGH CHAUHAN | MEMBER | 96067515 |
| **16.** | VIVEK SAXENA | MEMBER | 96085505 |
| **17.** | PRITI TRIPATHI | MEMBER | 96076644 |
| **18.** | APARNA | MEMBER | 95384983 |
| **19.** | PRIYANKA PANDEY | MEMBER | 96065235 |
| **20.** | NEERAJ KUMAR | MEMBER | 96088067 |
| **21.** | SANA | MEMBER | 96068429 |
| **22.** | INDRA SINGH | MEMBER | 96075615 |
| **23.** | PRAVEEN KUMAR | MEMBER | 96070994 |
| **24.** | RASHID JAMAL | MEMBER | 96067246 |
| **25.** | PRIYANKA SHAKYA | MEMBER | 96070853 |
| **26.** | SNIGDHA | MEMBER | 96073823 |
| **27.** | RICHA PATHAK | MEMBER | 96071173 |
| **28.** | ABHINAY CHOUDHARY | MEMBER | 96075585 |
| **29.** | ASHISH DWIVEDI | MEMBER | 96071121 |
| **30.** | LOKESH KUMAR | MEMBER | 96070922 |
| **31.** | SHIVANGI | MEMBER | 96108605 |
| **32.** | PRASHASTI | MEMBER | **96108647** |
| **33.** | ABHISHEK SHUKLA | MEMBER | 96075406 |
| **34.** | TOUSHIBA | MEMBER | 96078672 |

STUDENT'S PERFORMANCE

**Expert Lecture conducted under IEEE Student Chapter and SEED**:

An expert lecture on Micro-Electro-Mechanical systems was conducted under IEEE student chapter and SEED on 05th April,2019 .This lecture was given by distinguished Professor Rudra Pratap of IISc Bangalore.It was organised for the undergraduate ,post graduate students, researchers and faculty. Prof. Rudra Pratap is international advisor for MEMS and the current Deputy director of IISc Bangalore

## STUDENT PARTICIPATION IN PROJECT EXHIBITIONS

eYantra, sponsored by MHRD under the National Mission on Education through ICT program, is an initiative by IIT Bombay that aims to create the next generation of embedded systems engineers with a practical outlook to help provide practical solutions to some of the real world problems.It conducts two competitions i.e., Ideas Competition (eYIC) and Robotics Competition (eYRC).The teams register themselves with 4 members and give a qualifier test. The selected teams are given different tracks under a common theme. In 2017, 8 teams from our Institute as listed in table given below has been qualified round 1 and went further out of which 2 teams made it to the last track and received robotics kit, while 1 made it to finals at IIT Bombay and stood II. After the competition, based on interviews, eYantra offered internship to 35 students out of which one of our students did summer internship there.This year, 10 teams have cleared the qualifiers.

| Roll No. | Name of the Student | Tournament/Event Name | Event Type | Held At | Organised By | Date/ Year | Post/Result |
|---|---|---|---|---|---|---|---|
| 1505231010 | Asheesh Raikwar | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1505231008 | Ankur | E-Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Participated |
| 1505231042 | Shreya Singh | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231017 | Harsh Jain | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231002 | Abhijeet Vishwakarma | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231023 | Malay Shukla | E-Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Ongoing |
| 1605231047 | Shruti Joshi | E-Yantra | Technical | Outside Campus | IIT Bombay | 2018 | 2nd rank |
| 1605231024 | Nilay Chaurasia | E-Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Participation |
| 1605231036 | Ritu Asthana | E-Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Participation |
| 1605231035 | Ram Mahesh | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | 2nd All India Rank |
| 1605231018 | HARSHDEEP SINGH | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231042 | Shikhar Shukla | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231020 | Jyotsna Sharma | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | 2nd |
| | Shivangi Mishra | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | 2nd |

Table 4.5.3 a

STUDENT'S PERFORMANCE

# CO- CURRICULAR& SPORTS ACTIVITIES

| Roll No. | Name of the Student | Tournament/Event Name | Event Type | Held At | Organised By | Date /Year | Post/Result |
|---|---|---|---|---|---|---|---|
| 1505231041 | Shretika Jain | Abhigyan | Technical, Literary & Management | In Campus | AKTU | 2018 | General Secretery |
| 1505231041 | Shretika Jain | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Organising Committee |
| 1505231041 | Shretika Jain | Parakram | Technical | In Campus | IET Lucknow | 2018 | Robotics Coordinator |
| 1505231041 | Shretika Jain | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231041 | Shretika Jain | Techkriti(Manual Bot) | Technical | Outside Campus | IIT Kanpur | 2016 | Participated |
| 1505231029 | Palak Agarwal | Abhigyan | Technical, Literary & Management | In Campus | AKTU | 2018 | Technical Coordinator |
| 1505231029 | Palak Agarwal | Parakram | Sports | In Campus | IET Lucknow | 2018 | Technical Coordinator |
| 1505231029 | Palak Agarwal | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Technical Coordinator |
| 1505231029 | Palak Agarwal | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Table Tennis Assistant Coordinator |
| 1505231029 | Palak Agarwal | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Chess Volunteer |
| 1505231029 | Palak Agarwal | Chess | Sports | Outside Campus | IIM Lucknow | 2015 | 1st |
| 1505231029 | Palak Agarwal | Techkriti(Manual Bot) | Technical | Outside Campus | IIT Kanpur | 2016 | Participated |
| 1505231010 | Asheesh Raikwar | Robotryst | Technical | Outside Campus | IIT Delhi | 2016 | Participated |
| 1505231010 | Asheesh Raikwar | Techkriti (Manuvere Robotics) | Technical | Outside Campus | IIT Kanpur | 2017 | 4th |
| 1505231010 | Asheesh Raikwar | Techkriti(Manual Bot) | Technical | Outside Campus | IIT Kanpur | 2016 | Participated |
| 1505231010 | Asheesh Raikwar | Technocruise | Technical | Outside Campus | IIT Kanpur | 2017 | 2nd |
| 1505231010 | Asheesh Raikwar | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231010 | Asheesh Raikwar | E-Yantra(Robotics) | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1505231010 | Asheesh Raikwar | Sustainable Technology Awareness Program | Technical | Outside Campus | Anna University, Chennai | 2016 | Participated |
| 1505231051 | Viny Sharma | Pravah | Arts and Cultural | In Campus | AKTU | 2018 | Vogue Coordinator |
| 1505231051 | Viny Sharma | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Promotion Coordinator |
| 1505231051 | Viny Sharma | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Promotion Assistant Coordinator |
| 1505231051 | Viny Sharma | Encore (Mime) | Cultural | In Campus | IET Lucknow | 2016 | 1st |
| 1505231051 | Viny Sharma | Encore (Skit) | Cultural | In Campus | IET Lucknow | 2016 | 1st |
| 1505231051 | Viny Sharma | Encore (Street Play) | Cultural | In Campus | IET Lucknow | 2016 | 1st |
| 1505231008 | Ankur | E-Yantra(Robotics) | Technical | Outside Campus | IIT Bombay | 2018 | Participated |
| 1505231008 | Ankur | Robotryst | Technical | Outside Campus | IIT Delhi | 2016 | Participated |
| 1505231008 | Ankur | Parakram (Botball) | Technical | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231008 | Ankur | Shauryotsava (Football) | Sports | In Campus | IET Lucknow | 2018 | Participated |
| 1505231008 | Ankur | Shauryotsava (Football) | Sports | In Campus | IET Lucknow | 2017 | Participated |
| 1505231008 | Ankur | Shauryotsava (Football) | Sports | In Campus | IET Lucknow | 2016 | Participated |
| 1505231008 | Ankur | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2018 | Robotics Coordinator |
| 1505231008 | Ankur | Parakram | Technical | In Campus | IET Lucknow | 2018 | Robotics Coordinator |

# STUDENT'S PERFORMANCE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1505231008 | Ankur | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231008 | Ankur | Robotics Workshop | Technical | In Campus | IET Lucknow | 2018 | Mentor |
| 1505231022 | Harshit Srivastava | Parakram | Technical | In Campus | IET Lucknow | 2018 | Co-Coordinator |
| 1505231022 | Harshit Srivastava | Convergence | Alumni Meet | In Campus | IET Lucknow | 2017 | Co-Coordinator |
| 1505231022 | Harshit Srivastava | Parakram | Technical | In Campus | IET Lucknow | 2017 | Overall Assistant Coordinator |
| 1505231022 | Harshit Srivastava | Encore | Cultural | In Campus | IET Lucknow | 2017 | Sponsorship Assistant Coordinator |
| 1505231022 | Harshit Srivastava | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Sponsorship Assistant Coordinator |
| 1505231044 | Shubhi Singh | Robotryst | Technical | Outside Campus | IIT Delhi | 2016 | Finalist |
| 1505231044 | Shubhi Singh | Encore (Street Play) | Cultural | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231044 | Shubhi Singh | Varchasva (Street Play) | Cultural | Outside Campus | IIM Lucknow | 2016 | 1st |
| 1505231044 | Shubhi Singh | Thomso (Street Play) | Cultural | Outside Campus | IIT Roorkee | 2016 | 3rd |
| 1505231045 | Snigdha Shukla | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Carrom Coordinator |
| 1505231045 | Snigdha Shukla | Shauryotsava (Carrom, Girls Doubles) | Sports | In Campus | IET Lucknow | 2018 | 1st |
| 1505231045 | Snigdha Shukla | Shauryotsava (Carrom, Mixed Doubles) | Sports | In Campus | IET Lucknow | 2018 | 2nd |
| 1505231045 | Snigdha Shukla | Shauryotsava (Carrom, Girls Singles) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231045 | Snigdha Shukla | Shauryotsava (Carrom, Mixed Doubles) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231045 | Snigdha Shukla | Encore (Street Play) | Cultural | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231045 | Snigdha Shukla | Varchasva (Street Play) | Cultural | Outside Campus | IIM Lucknow | 2016 | 1st |
| 1505231045 | Snigdha Shukla | Thomso (Street Play) | Cultural | Outside Campus | IIT Roorkee | 2016 | 3rd |
| 1505231002 | Aditya Tewari | Integral Sports (Football) | Sports | Outside Campus | Integral University | 2016 | 2nd |
| 1505231002 | Aditya Tewari | Shauryotsava (Football) | Sports | In Campus | IET Lucknow | 2018 | 3rd |
| 1505231002 | Aditya Tewari | Varchasva (Futsal) | Sports | Outside Campus | IIM Lucknow | 2016 | Participated |
| 1505231009 | Arpit Tayal | Parakram | Technical | In Campus | IET Lucknow | 2018 | Sponsorship Coordinator |
| 1505231009 | Arpit Tayal | Encore (Street Play) | Cultural | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231009 | Arpit Tayal | Thomso (Street Play) | Cultural | Outside Campus | IIT Roorkee | 2016 | 3rd |
| 1505231009 | Arpit Tayal | Iris (Street Play) | Cultural | Outside Campus | IIM Indore | 2017 | 2nd |
| 1505231009 | Arpit Tayal | Varchasva (Street Play) | Cultural | Outside Campus | IIM Lucknow | 2016 | 1st |
| 1505231009 | Arpit Tayal | Shauryotsava (Basketball) | Sports | In Campus | IET Lucknow | 2017 | 3rd |
| 1505231009 | Arpit Tayal | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2016 | Participated |
| 1605231903 | Akanksha Singh | AKTU Arts and Cutural Zonals (Mehandi) | Cultural | In Campus | AKTU | 2018 | 3rd |
| 1605231903 | Akanksha Singh | Shauryotsava (Shortput) | Sports | In Campus | IET Lucknow | 2017 | 3rd |
| 1605231903 | Akanksha Singh | Shauryotsava (Chess) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1605231903 | Akanksha Singh | Shauryotsava (Shortput) | Sports | In Campus | IET Lucknow | 2018 | Participated |

# STUDENT'S PERFORMANCE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1505231014 | Ayush Rai | Ideathon | Technical | Outside Campus | IIT Delhi | 2017 | Finalist |
| 1505231040 | Shivang Singh | Encore (Western Music) | Cultural | In Campus | IET Lucknow | 2015 | 1st |
| 1505231040 | Shivang Singh | Encore | Cultural | In Campus | IET Lucknow | 2015 | Mr. Encore |
| 1505231040 | Shivang Singh | Anwesha (Singing) | Cultural | Outside Campus | IIT Patna | 2015 | Participated |
| 1505231040 | Shivang Singh | Thomso (Singing) | Cultural | Outside Campus | IIT Roorkee | 2016 | Participated |
| 1505231040 | Shivang Singh | Pravah | Arts and Cultural | In Campus | AKTU | 2018 | Western Music Co-Coordinator |
| 1505231031 | Pranav Garg | Parakram | Technical | In Campus | IET Lucknow | 2018 | Event Coordinator |
| 1505231031 | Pranav Garg | Parakram | Technical | In Campus | IET Lucknow | 2017 | Event Manager |
| 1505231031 | Pranav Garg | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231031 | Pranav Garg | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231018 | Deepak Sharma | Pravah | Arts and Cultural | In Campus | AKTU | 2018 | Accomodation Coordinator |
| 1505231018 | Deepak Sharma | Abhigyan | Technical, Literary & Management | In Campus | AKTU | 2018 | Organising Committee |
| 1505231018 | Deepak Sharma | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Assistant Coordinator |
| 1505231018 | Deepak Sharma | Encore | Cultural | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231018 | Deepak Sharma | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231018 | Deepak Sharma | Parakram | Technical | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231018 | Deepak Sharma | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231018 | Deepak Sharma | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231018 | Deepak Sharma | Parakram | Technical | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231018 | Deepak Sharma | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2018 | Coordinator |
| 1505231018 | Deepak Sharma | Convergence | Alumni Meet | In Campus | IET Lucknow | 2017 | Co-Coordinator |
| 1505231038 | Shashikant | Parakram | Technical | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231038 | Shashikant | Parakram | Technical | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231038 | Shashikant | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231038 | Shashikant | Shauryotsava (Carrom) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231049 | Tanya Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231049 | Tanya Yadav | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231049 | Tanya Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231049 | Tanya Yadav | Encore | Cultural | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231049 | Tanya Yadav | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Assistant Coordinator |
| 1505231049 | Tanya Yadav | Convergence | Alumni Meet | In Campus | IET Lucknow | 2017 | Co-Coordinator |
| 1505231049 | Tanya Yadav | Abhigyan | Technical, Literary & Management | In Campus | AKTU | 2018 | Literary Coodinator |
| 1505231049 | Tanya Yadav | Shauryotsava (Badminton) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231049 | Tanya Yadav | Shauryotsava (Badminton) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231049 | Tanya Yadav | Debate | Literary | Outside Campus | IIM Lucknow | 2017 | Finalist |
| 1505231049 | Tanya Yadav | Ideathon | Technical | Outside Campus | IIT Delhi | 2017 | Finalist |

# STUDENT'S PERFORMANCE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1505231049 | Tanya Yadav | Debate & Essay Writing | Literary | In Campus | NTPC | 2017 | 3rd |
| 1505231017 | Chandan Jaiswal | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2018 | General Secretery |
| 1505231017 | Chandan Jaiswal | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231017 | Chandan Jaiswal | Convergence | Alumni Meet | In Campus | IET Lucknow | 2017 | Alumni Relaions Coordinator |
| 1505231017 | Chandan Jaiswal | Encore | Cultural | In Campus | IET Lucknow | 2017 | Alumni Relaions Coordinator |
| 1505231017 | Chandan Jaiswal | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231017 | Chandan Jaiswal | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231048 | Sushmita Singh | Parakram (Kontrivence) | Technical | In Campus | IET Lucknow | 2015 | 2nd |
| 1505231048 | Sushmita Singh | Parakram (Kombo) | Technical | In Campus | IET Lucknow | 2015 | 2nd |
| 1505231048 | Sushmita Singh | Shauryotsava (Table Tennis, Doubles) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Table Tennis, Singles) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Throwball) | Sports | In Campus | IET Lucknow | 2016 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Table Tennis, Doubles) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231048 | Sushmita Singh | Shauryotsava (Table Tennis, Singles) | Sports | In Campus | IET Lucknow | 2016 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Table Tennis, Branch) | Sports | In Campus | IET Lucknow | 2016 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Basketball) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231048 | Sushmita Singh | Shauryotsava (Badminton) | Sports | In Campus | IET Lucknow | 2016 | 3rd |
| 1505231048 | Sushmita Singh | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231048 | Sushmita Singh | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231048 | Sushmita Singh | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231048 | Sushmita Singh | Spardha (Badminton) | Sports | Outside Campus | IIT BHU | 2016 | Participated |
| 1505231048 | Sushmita Singh | MATLAB | Technical | Outside Campus | XPLOCC Technologies | 2017 | Workshop |
| 1505231048 | Sushmita Singh | Encore | Cultural | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231005 | Amishi Singh | Robotryst | Technical | Outside Campus | IIT Delhi | 2017 | Participated |
| 1505231005 | Amishi Singh | Encore (Mime) | Cultural | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231005 | Amishi Singh | Encore (Mainplay) | Cultural | In Campus | IET Lucknow | 2016 | 1st |
| 1505231005 | Amishi Singh | Encore (Skit) | Cultural | In Campus | IET Lucknow | 2016 | 1st |
| 1505231005 | Amishi Singh | Encore (Skit) | Cultural | In Campus | IET Lucknow | 2016 | Best Actress |
| 1505231005 | Amishi Singh | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231005 | Amishi Singh | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231005 | Amishi Singh | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Informals Coordinator |
| 1505231043 | Shubham Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231043 | Shubham Yadav | Aavahan (TT) | Sports | Outside Campus | RMNLU | 2016 | 1st |
| 1505231043 | Shubham Yadav | Varchasva (TT) | Sports | Outside Campus | IIM Lucknow | 2016 | 2nd |
| 1505231043 | Shubham Yadav | Shauryotsava (TT) | Sports | In Campus | IET Lucknow | 2016 | 2nd |

# STUDENT'S PERFORMANCE

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1505231043 | Shubham Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231043 | Shubham Yadav | Shauryotsava (TT) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231043 | Shubham Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Table Tennis Coordinator |
| 1505231043 | Shubham Yadav | Shauryotsava (TT) | Sports | In Campus | IET Lucknow | 2018 | 2nd |
| 1505231043 | Shubham Yadav | AKTU Zonals (TT) | Sports | In Campus | AKTU | 2018 | 3rd |
| 1505231043 | Shubham Yadav | AKTU Zonals (TT) | Sports | In Campus | AKTU | 2018 | 3rd |
| 1505231043 | Shubham Yadav | Encore (Skit) | Cultural | In Campus | IET Lucknow | 2016 | Best Actor |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Singles) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Mixed) | Sports | In Campus | IET Lucknow | 2016 | 1st |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Singles) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Doubles) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Singles) | Sports | In Campus | IET Lucknow | 2018 | 1st |
| 1505231043 | Shubham Yadav | Shauryotsava (TT, Doubles) | Sports | In Campus | IET Lucknow | 2018 | 1st |
| 1505231033 | Rahul Gola | Encore | Cultural | In Campus | IET Lucknow | 2015 | Volunteer |
| 1505231033 | Rahul Gola | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231033 | Rahul Gola | Convergence | Alumni Meet | In Campus | IET Lucknow | 2018 | Technical Coordinator |
| 1505231033 | Rahul Gola | Parakram | Technical | In Campus | IET Lucknow | 2018 | Technical Coordinator |
| 1505231042 | Shreya Singh | Pravah | Arts and Cultural | In Campus | AKTU | 2018 | Fine Arts Coordinator |
| 1505231042 | Shreya Singh | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Fine Arts Coordinator |
| 1505231042 | Shreya Singh | E-Yantra(Robotics) | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1505231047 | Sujata Gupta | Tech Paper Presentation | Technical | Outside Campus | IETE | 2016 | Participated |
| 1505231047 | Sujata Gupta | Robotryst | Technical | Outside Campus | IIT Delhi | 2016 | Participated |
| 1505231047 | Sujata Gupta | Convergence | Alumni Meet | In Campus | IET Lucknow | 2017 | Coordinator |
| 1505231047 | Sujata Gupta | Pravah | Arts and Cultural | In Campus | AKTU | 2018 | Co-Coordinator |
| 1505231047 | Sujata Gupta | Abhigyan | Technical, Literary & Management | In Campus | AKTU | 2018 | Co-Coordinator |
| 1505231047 | Sujata Gupta | Parakram | Technical | In Campus | IET Lucknow | 2018 | Alumni Coordinator |
| 1505231047 | Sujata Gupta | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Fine Arts Coordinator |
| 1505231047 | Sujata Gupta | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2018 | Co-Coordinator |
| 1505231047 | Sujata Gupta | Encore | Cultural | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231047 | Sujata Gupta | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231047 | Sujata Gupta | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Coordinator |
| 1505231047 | Sujata Gupta | Encore | Cultural | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231047 | Sujata Gupta | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231047 | Sujata Gupta | Parakram | Technical | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231047 | Sujata Gupta | Antragni | Arts and Cultural | Outside Campus | IIT Kanpur | 2016 | Participated |
| 1505231047 | Sujata Gupta | MATLAB | Technical | Outside Campus | XPLOCC Technologies | 2017 | Workshop |

# STUDENT'S PERFORMANCE

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|---|---|---|---|---|---|---|---|
| 1505231047 | Sujata Gupta | Shauryotsava (Basketball) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231047 | Sujata Gupta | Shauryotsava (Kho-Kho) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231047 | Sujata Gupta | Encore (Creative Writing) | Literary | In Campus | IET Lucknow | 2016 | 1st |
| 1505231047 | Sujata Gupta | Debate | Literary | Outside Campus | IIM Lucknow | 2017 | Finalist |
| 1505231032 | Pranshu Patel | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2015 | Participated |
| 1505231032 | Pranshu Patel | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Co-Coordinator |
| 1505231015 | Ayush Verma | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2015 | Participated |
| 1505231015 | Ayush Verma | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Co-Coordinator |
| 1505231021 | Govind Kumar | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2015 | Participated |
| 1505231030 | Pawan Kumar | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2015 | Participated |
| 1505231026 | Mahima Singh Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Volleyball Coordinator |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Volleyball) | Sports | In Campus | IET Lucknow | 2018 | 1st |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Kabaddi) | Sports | In Campus | IET Lucknow | 2018 | 1st |
| 1505231026 | Mahima Singh Yadav | Encore (Debate) | Literary | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231026 | Mahima Singh Yadav | Varchasva | Sports | Outside Campus | IIM Lucknow | 2017 | Participated |
| 1505231026 | Mahima Singh Yadav | Varchasva | Sports | Outside Campus | IIM Lucknow | 2016 | Participated |
| 1505231026 | Mahima Singh Yadav | Ideathon | Technical | Outside Campus | IIT Delhi | 2017 | Participated |
| 1505231026 | Mahima Singh Yadav | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Electronics Circuit Coordinator |
| 1505231026 | Mahima Singh Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Volleyball) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Kabaddi) | Sports | In Campus | IET Lucknow | 2017 | 1st |
| 1505231026 | Mahima Singh Yadav | Quiz Competition | Mixed | In Campus | CHE Dept IET Lucknow | 2017 | 3rd |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Cricket) | Sports | In Campus | IET Lucknow | 2017 | 2nd |
| 1505231026 | Mahima Singh Yadav | Shauryotsava | Sports | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Volleyball) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Kabaddi) | Sports | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231026 | Mahima Singh Yadav | Shauryotsava (Cricket) | Sports | In Campus | IET Lucknow | 2016 | 1st |
| 1505231026 | Mahima Singh Yadav | Volleyball | Sports | Outside Campus | BBD Lucknow | 2016 | Participated |
| 1505231012 | Ashutosh Dwivedi | Parakram | Technical | In Campus | IET Lucknow | 2018 | Technical Coordinator |
| 1505231012 | Ashutosh Dwivedi | Ankuran | Technical | In Campus | ECE Dept. IET Lucknow | 2017 | Event Manager |
| 1505231012 | Ashutosh Dwivedi | E-Cell | Technical | Outside Campus | DTU | 2017 | Campus Ambassador |
| 1505231012 | Ashutosh Dwivedi | Encore | Cultural | In Campus | IET Lucknow | 2017 | Assistant Coordinator |

# STUDENT'S PERFORMANCE

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|---|---|---|---|---|---|---|---|
| 1505231012 | Ashutosh Dwivedi | Parakram | Technical | In Campus | IET Lucknow | 2016 | Volunteer |
| 1505231012 | Ashutosh Dwivedi | LAN Gaming | Technical | Outside Campus | IIM Lucknow | 2017 | 1st |
| 1505231012 | Ashutosh Dwivedi | Parakram (Botball) | Technical | In Campus | IET Lucknow | 2016 | 2nd |
| 1505231012 | Ashutosh Dwivedi | Intershala | Technical | Outside Campus | Internshala | | Student Partner |
| 1505231006 | Amit Kumar | Parmarth | Social Club | In Campus | IET Lucknow | 2015-16 | Volunteer |
| 1505231006 | Amit Kumar | Parmarth | Social Club | In Campus | IET Lucknow | 2016-17 | Mentor |
| 1505231006 | Amit Kumar | Parakram | Technical | In Campus | IET Lucknow | 2017 | Assistant Coordinator |
| 1505231006 | Amit Kumar | Kho-Kho | Sports | Outside Campus | RGIPT | | 1st |
| 1505231006 | Amit Kumar | MATLAB | Technical | Outside Campus | XPLOCC Technologies | 2017 | Workshop |
| 1505231006 | Amit Kumar | Robotryst | Technical | Outside Campus | IIT Delhi | 2016 | Participated |
| 1505231006 | Amit Kumar | Workshop | Technical | Outside Campus | Robosapiens Technology | 2015 | Member |
| 1505231006 | Amit Kumar | Parakram | Technical | In Campus | IET Lucknow | 2018 | Co-Coordinator |
| 1505231011 | Ashmita | Dance | Cultural | Outside Campus | IIM Lucknow | 2015 | Participated |
| 1505231011 | Ashmita | Dance | Cultural | Outside Campus | IIM Lucknow | 2016 | Participated |
| 1505231011 | Ashmita | Dance | Cultural | Outside Campus | MNNIT Allahabad | 2016 | 3rd |
| 1505231011 | Ashmita | Dance | Cultural | Outside Campus | IIT Roorkee | 2016 | Participated |
| 1505231011 | Ashmita | Encore (Dance) | Cultural | In Campus | IET Lucknow | 2015 | 1st |
| 1605231046 | Shivendu Yadav | Pravah | cultural | In campus | IET Lucknow | 2018 | Assistant coordinator |
| 1605231025 | Nitin Saini | Ankuran,parakram,pravah,abhigyan,encore,convergence | Technical Literary and Management | In campus | IET lucknow /held at IET lucknow | 2016 2017 | Volunteer and assistant coordinator |
| 1605231041 | Shardul Maurya | NONE | Sports | In campus | NONE | NONE | NONE |
| 1605231002 | Abhijeet Vishwakarma | Shauryotsava (basketball) | Sports | In campus | IET Lucknow | 2017 | bronze medal |
| 1605231017 | Harsh Jain | E-yantra2017 | Technical | outside campus | IIT BOMBAY | 2017 | Participated |
| 1605231017 | Harsh Jain | Techrkiti | Technical | outside campus | IIT KANPUR | 2018 | Zonal Winner |
| 1605231002 | Abhijeet Vishwakarma | Parakram (Robotics autonomous) | Technical | In campus | IET Lucknow | 2017 | 2nd |
| 1605231017 | Harsh Jain | Abhigyan | Technical Literary and Management | In campus | A. K. T. U | 2018 | Assistant coordinator(Robotics) |
| 1605231032 | Primanshu Kuma5kumar | Prakaram | Technical | In campus | IET LUCKNOW | 2017 | 2nd |
| 1605231002 | Abhijeet Vishwakarma | E-Yantra | Technical | outside campus | IIT Bombay | 2017 | Participated |
| 1605231002 | Abhijeet Vishwakarma | Technocruise | Technical | outside campus | IIT Kanpur | 2018 | Participated |
| 1605220052 | Tanay Pandey | Shauryotsava | Sports | In campus | IET , Lucknow | 2017 | Technical Associate Coordinator |
| 1605231017 | Harsh Jain | Parakram | Alumni meet | In campus | IET LUCKNOW | 2018 | Assistant coordinator (Robotics) |
| 1605231004 | Aditya Varma | Encore -2016-17 | art and Cultural | In campus | Audi, IET Lucknow | 2016-17 | Participated |
| 1605231002 | Abhijeet Vishwakarma | Pravah | art and Cultural | In campus | IET Lucknow | 2018 | Assistant coordinator |
| 1605231004 | Aditya Varma | Ankuran 2016-17 | Technical | In campus | Seed society, | 2016-17 | Participated |

# STUDENT'S PERFORMANCE

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|---|---|---|---|---|---|---|---|
| 160523107 | Harsh Jain | Dr. D. R. Singh Memorial National Level Debate competition | Literary | outside campus | P. C.T.E Group of Institution, Ludhiana | 2018 | Participated |
| 1605231002 | Abhijeet Vishwakarma | Shauryotsava | Sports | In campus | IET Lucknow | 2018 | Assistant coordinator |
| 1605231004 | Aditya Varma | Convergence-17 | Alumni meet | In campus | IET | 2017 | Assistant coordinator |
| 1605231004 | Aditya Varma | PRAVAH -18 | cultural | In campus | AKTU | 2018 | Assistant coordinator |
| 1605231002 | Abhijeet Vishwakarma | Ankuran(autonomous bot) | Technical | In campus | IET Lucknow | 2017 | 2nd |
| 1605231023 | Malay Shukla | E-yantra | Technical | outside campus | IIT Bombay | 2018-19 | Ongoing |
| 1605231031 | Pratyush Kumar Ojha | Shauryotsava(Carrom) | Sports | In campus | IET Lucknow | 2017-18 | 1st |
| 1605231023 | Malay Shukla | Robo-Soccer (Ankuran) | Technical | In campus | IET Lucknow | 2016-17 | 2nd Position |
| 1605231031 | Pratyush Kumar Ojha | PARAKRAM | Technical | In campus | IET Lucknow | 2017 | Participated |
| 1605231029 | Pranav Srivastava | UDGHOSH 18 | Sports | outside campus | IIT KANPUR | 2018 | Lost in Qualifiers |
| 1605231029 | Pranav Srivastava | ENCORE/PRAVAH | art and Cultural | In campus | IET LUCKNOW | 2018 | Graphics Team and Compering Team |
| 1605231029 | Pranav Srivastava | PARAKRAM 18 | Technical | In campus | IET LUCKNOW | 2018 | Assistant Technical Coordinator |
| 1605231029 | Pranav Srivastava | ANKURAN | Technical | In campus | IET EC | 2017 | RUNNER UP IN ROBO-SOCCER |
| 1605231029 | Pranav Srivastava | SHAURYOTSAVA | Sports | In campus | IET LUCKNOW | 2017 | Media Team |
| 1605251034 | Radha Agarwal | Spardha | Sports | outside campus | IIT BHU | 2017 | Silver medal |
| 1605251034 | Radha Agarwal | Sangram | Sports | Outside Campus | IIT Roorkee | 2017 | Silver medal |
| 1605251034 | Radha Agarwal | Shauryotsava | Sports | In Campus | I.E.T | 2017 2018 | Assistant Coordinator Taekwondo |
| 1605231047 | Shruti Joshi | E- Yantra | Technical | Outside Campus | IIT Bombay | 2018 | 2nd rank |
| 1605231024 | Nilay Chaurasia | E - Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Participation |
| 1605231036 | Ritu Asthana | E - Yantra | Technical | Outside Campus | IIT Bombay | 2018 | Participation |
| 1605251034 | Radha Agarwal | Parakram | Technical | In Campus | I.E.T | 2017,18 | Tech Paper Presentation: Second (2017) and Aeromodelling: RC Plane (2018) |
| 1605231047 | Shruti Joshi | Parakram | Technical | In Campus | IET Lucknow | 2018 | Assistant Coordinator |
| 1605231005 | Akansh Agarwal | Techkriti 2k18 | Technical | Outside Campus | IIT Kanpur | 2018 | Participation |
| 1605231005 | Akansh Agarwal | Parakram(Autonomous) | Technical | In Campus | I.E.T. Lucknow | 2018 | Assistant Coordinator |
| 1605231035 | Ram Mahesh | E-Yantra 2017 | Technical | Outside Campus | IIT Bombay | 2017 | 2nd All India Rank |
| 1605231035 | Ram Mahesh | Tech Kriti 2017 | Technical | Outside Campus | IIT Kanpur | 2017 | 6 Zonal Rank |
| 1705231908 | Pratibha Singh | Parakram | Technical | In Campus | I.E.T lucknow | 2018 | Participated |
| 1605231018 | Harshdeep Singh | Pravah | Art And Cultural | In Campus | AKTU | 2018 | Assistant Coordinator |
| 1605231018 | Harshdeep Singh | Abhigyan | Technical Literary And Management | In Campus | AKTU | 2018 | Assistant Coordinator |
| 1605231018 | Harshdeep Singh | Parakram | Technical | In Campus | Pt. Ram Prasad Bismil Auditorium | 2018 | Assistant Coordinator |
| 1605231018 | Harshdeep Singh | Convergence | Alumni Meet | In Campus | IET | 2017 | Assistant Coordinator |
| 1605231054 | Tejun Verma | Encore | Art And Cultural | In Campus | I. E. T LUCKNOW | 2016 | Participated |

# STUDENT'S PERFORMANCE

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|---|---|---|---|---|---|---|---|
| 1605231018 | Harshdeep Singh | Techkriti | Technical | Outside Campus | IIT KANPUR | 2018 | IARC - NATIONAL FINALS |
| 1605231018 | Harshdeep Singh | E- Yantra | Technical | Outside Campus | IIT BOMBAY | 2017 | Participated |
| 1605231015 | Gaurav Singh | Eyantra | Technical | Outside Campus | IIT BOMBAY | 2017 | Participated |
| 1605231054 | Tejun Verma | Thomso | Art And Cultural | Outside Campus | IIT ROORKEE | 2017 | Participated/Third in group performance |
| 1605231054 | Tejun Verma | Pravah | Art And Cultural | In Campus | I. E. T LUCKNOW | 2018 | Assistant Coordinator(Overall) |
| 1605231015 | Gaurav Singh | Ankuran | Technical | In Campus | SEED | 2017 | 1st |
| 1605231011 | Devanshu Sinha | Techkriti | Technical | Outside Campus | IIT KANPUR | 2017 | Participant |
| 1605231038 | Rohit Bansal | Pravah | Alumni Meet | In Campus | IET LUCKNOW | 2017 | Assistant Coordinator |
| 1605231042 | Shikhar Shukla | Ankuran 17 | Technical | In Campus | IET Lucknow | 2017 | Participated |
| 1605231038 | Rohit Bansal | Convergence | Alumni Meet | In Campus | IET LUCKNOW | 2017 | Assistant Coordinator |
| 1605231038 | Rohit Bansal | Convergence | Alumni Meet | In Campus | IET LUCKNOW | 2017 | Assistant Coordinator |
| 1605231042 | Shikhar Shukla | Parakram (Robotics) | Technical | In Campus | IET Lucknow | 2017 | Winner |
| 1605231038 | Rohit Bansal | Pravah | Art And Cultural | In Campus | IET LUCKNOW | 2018 | Assistant Coordinator |
| 1605231038 | Rohit Bansal | Abhigyan | Technical Literary And Management | In Campus | AKTU | 2018 | Assistant Coordinator |
| 1605232138 | Rohit Bansal | Eyantra | Technical | Outside Campus | IIT BOMBAY | 2018 | Participated |
| 1605231042 | Shikhar Shukla | Ecokart (Innovation) | Technical | Outside Campus | Ecokart Series | 2018 | Participated |
| 1605231042 | Shikhar Shukla | Student Kart Design Challenge (Innovation) | Technical | Outside Campus | Society of Mechanical and Automotive Engineers / Hyderabad | 2018 | Winner (Best Business Plan) |
| 1605231042 | Shikhar Shukla | Abhigyaan | Technical | In Campus | Abdul Kalam Technical University | 2018 | Assistant Coordinator (Robotics) |
| 1605231038 | Rohit Bansal | Technocruise Iarc | Technical | Outside Campus | Techkriti, IIT KANPUR | 2018 | Participated |
| 1605231042 | Shikhar Shukla | Parakram | Technical | In Campus | IET Lucknow | 2018 | Assistant Coordinator (Robotics) |
| 1605231042 | Shikhar Shukla | E-Yantra | Technical | Outside Campus | IIT Bombay | 2017 | Participated |
| 1605231006 | Ananya Mishra | Encore 2017 | Cultural | In Campus | IET LUCKNOW | 2017 | Compering |
| 1605231006 | Ananya Mishra | Encore 2018 | Cultural | In Campus | IET LUCKNOW | 2018 | Assistant coordinator |
| 1605231006 | Ananya Mishra | Convergence 2017 | Alumni Meet | In Campus | IET LUCKNOW | 2017 | Assistant coordinator |
| 1605231006 | Ananya Mishra | Antaragini 2017 | Cultural | Outside Campus | IIT KANPUR | 2017 | Participated |
| 1605231058 | Vedvani Tiwari | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Volunteer |
| 1605231006 | Ananya Mishra | Techkriti ( Manual Bot) | Technical | Outside Campus | IIT KANPUR | 2018 | Participated |
| 1605231006 | Ananya Mishra | Techkriti (Autonomous Bot) | Technical | Outside Campus | IIT KANPUR | 2018 | Participated |
| 1605231058 | Vedvani Tiwari | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Assistant coordinator |
| 1605231006 | Ananya Mishra | Technocruise (Autonomous Bot) | Technical | Outside Campus | IIT KANPUR | 2018 | 1st position |
| 1605231058 | Vedvani Tiwari | Shauryotsava | Sports | In Campus | IET Lucknow | 2017 | Winner volleyball (intra) runner-up volleyball ( inter) winner cricket(intra) |

# STUDENT'S PERFORMANCE

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|---|---|---|---|---|---|---|---|
| 1605231058 | Vedvani Tiwari | Shauryotsava | Sports | In Campus | IET Lucknow | 2018 | Winner volleyball (intra), winner cricket(inter), runner-up table tennis(intra) |
| 1605231058 | Vedvani Tiwari | Iim Varchasva | Sports | Outside Campus | IIM Lucknow | 2017 | Upto semifinals in Volleyball |
| 1605231058 | Vedvani Tiwari | Iim Varchasva | Sports | Outside Campus | IIM Lucknow | 2018 | Upto semifinals in volleyball and throwball. |
| 1705231903 | Himanshu | Shauryotsava | Sports | In Campus | Institute | 2017 | Taekwondo |
| 1705231903 | Himanshu | Shauryotsava | Sports | In Campus | Institute | 2017 | Taekwondo |
| 1605231058 | Vedvani Tiwari | Iim Varchasva | Literary | Outside Campus | IIM Lucknow | 2017 | Participated in Debate |
| 1605231058 | Vedvani Tiwari | Hemwati Nandan Bahuguna Inter-University Debate Competition | Literary | In Campus | Organised by U.P. Government | 2018 | 4th in Debate |
| 1605231020 | Jyotsna Sharma | Thomso'18 - Presidential Debate | Literary | Outside Campus | IIT Roorkee | 2018 | Yet to be declared |
| 1605231020 | Jyotsna Sharma | Bahuguna Inter University Debate | Literary | In Campus | AKTU | 2018 | Participation |
| 1605231020 | Jyotsna Sharma | Eyrc-17 | Technical | Outside Campus | IIT Bombay | 2017-18 | 2nd |
| 1605231020 | Jyotsna Sharma | Convergence | Alumni Meet | In Campus | IET Lucknow | 2018 | Coordinator |
| 1605231020 | Jyotsna Sharma | Parakram | Technical Literary And Management | In Campus | IET Lucknow | 2018 | Assistant Coordinator |
| 1695231020 | Jyotsna Sharma | Abhigyan | Technical Literary And Management | In Campus | AKTU | 2018 | Assistant coordinator |
| 1605231020 | Jyotsna Sharma | Pravah | Art And Cultural | In Campus | AKTU | 2018 | Assistant coordinator |
| 1605231020 | Jyotsna Sharma | Dr. B R Memorial Debate | Literary | Outside Campus | PCTE Groups of College-Ludhiana | 2018 | Participation |
| 1605231020 | Jyotsna Sharma | Shauryotsav- Kabaddi | Sports | In Campus | IET Lucknow | 2018 | 2nd |
| 1605231020 | Jyotsna Sharma | Antaragni'17 | Art And Cultural | Outside Campus | IIT Kanpur | 2017 | Participation |
| 1605231020 | Jyotsna Sharma | Encore - Parliamentary Debate | Art And Cultural | In Campus | IET Lucknow | 2017 | 1st |
| 1605231020 | Jyotsna Sharma | Antaragni'17 - Parliamentary Debate | Art And Cultural | Outside Campus | IIT Kanpur | 2016 | 3rd |

FACULTY INFORMATION AND CONTRIBUTIONS

| CRITERION 5 | FACULTY INFORMATION AND CONTRIBUTIONS | 2019 |
|---|---|---|

## Faculty Information and Contributions in the Department CAY (2019-20)

| Name of the Faculty Member | PAN | Qualification | | | Association with the Institution | Designation | Date on which designated as Professor/ Associate Professor | Date of Joining the Institution | Department | Specialization | Academic Research | | | Currently Associated (Y/N) Date of Leaving if NO | Nature of Association (Regular/ Contract) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Degree (highest degree) | University | Year of Attainment of higher qualification | | | | | | | Research Paper Publications | Ph.D. Guidance | Faculty Receiving Ph.D. during the Assessment Years | | |
| Dr. V. K. Singh( Ret) | ACVPS2190J | Ph.D | UPTU | (2004) | 18-10-1986 | Honoray Professor | 2004 | 18-10-1986 | ECE | Analog Signal Processing | 29J, 02C 04 B | 05Guided02 under progress | 02 | Y | Regular |
| Dr. Neelam Srivastava | AJXPS4156R | Ph.D | Lucknow University | (2004) | 22-08-1986 | Professor | 2009 | 22-08-1986 | ECE | Microwave Engg. | 34J, 42C 03 B | 02Guided05 under progress | 01 | Y | Regular |
| Dr. S.R.P.Sinha | AJTPS1263M | Ph.D | Lucknow University | (2004) | 19-04-1991 | Professor | 2013 | 19-04-1991 | ECE | Microelectronics /VLSI Devices and Circuit | 12J 02C | 01 under progress | NIL | Y | Regular |
| Dr. Subodh Wairya | AADPW3496R | Ph.D | MNNIT | (2012) | 06-05-1996 | Professor | 2012 | 06-05-1996 | ECE | VLSI Design | 34J 23C 03B | 01Guided06 under progress | 01 | Y | Regular |
| Dr. RCS Chauhan | ANGPC1919F | Ph.D | AKTU (HBTI) | (2015) | 24-08-2017 | Associate Professor | 2017 | 22-08-2017 | ECE | Optical Communication | 08J 07C | 01 under progress | NIL | Y | Regular |
| Dr. Rajiv Kumar Singh | BMHPS8104F | Ph.D | IIT BHU | (2011) | 30.10.2017 | Assist Professor | NA | 30-10-2017 | ECE | Microwave Engg. | 44J 29C | 02 under progress | NIL | Y | Regular |
| Er. Amit Kumar | ARSPK3083G | M.Tech | MNNIT | (2000) | 22-04-2008 | Assist Professor | NA | 22-04-2008 | ECE | Control System | 02J 05C | NA | NA | Y | Regular |
| Er. Abhishek Shrivastava | KQYPS1403P | M.Tech | IIT ISM Dhanbad | (2018) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | Electronics Communication | | NA | NA | Y | Contract |
| Er. Pradeep Kumar Verma | ASXPV2039B | M.Tech | NIT Kurukshetra | (2017) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | VLSI Design | 02C | NA | NA | Y | Contract |
| Er. Alok Kumar Jain | AQSPJ4847N | M.Tech | NIT Suratkal | (2018) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | Communication Enginnering | 01J 01C | NA | NA | Y | Contr. |
| Er. Manisha Rautela | COTPM3903B | M.Tech | IIT ISM Dhanbad | (2018) | 14-08-2018 | Cont. Faculty | NA | 14-08-2018 | ECE | Electronics Communication | | NA | NA | N | Contract |
| Er. Harshita Tiwari | AISPT7452M | M.Tech | IIIT Allahabad | (2014) | 28-08-2019 | Cont. Faculty | NA | 28-08-2019 | ECE | Electronics Communication | 01C | NA | NA | Y | Contract |
| Er. Ashish Kumar | CPJPK5105C | M.Tech | MNIT JAIPUR | (2019) | 31-08-2019 | Cont. Faculty | NA | 31-08-2019 | ECE | Electronics Communication | | NA | NA | Y | Contract |
| Er. Amit Kumar Gupta | BHLPG9887Q | M.Tech | IISc Bangalore | (2018) | 31-08-2019 | Cont. Faculty | NA | 31-10-2017 | ECE | Communication & Networks | 01J | NA | NA | Y | Contract |

# FACULTY INFORMATION AND CONTRIBUTIONS

## Faculty Information and Contributions in the Department CAYm1(2018-19)

| Name of the Faculty Member | PAN | Qualification | | | Association with the Institution | Designation | Date on which designated as Professor/ Associate Professor | Date of Joining the Institution | Department | Specialization | Academic Research | | | Associated (Y/N) Date of Leaving | Nature of Association (Regular/ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Degree (highest degree) | University | Year of Attainment of higher qualification | | | | | | | Research Paper Publications | Ph.D. Guidance | Faculty Receiving Ph.D. during the Assessment Years | | |
| Dr. V. K. Singh | ACVPS2190J | Ph.D | UPTU | (2004) | 18-10-1986 | Professor | 2004 | 18-10-1986 | ECE | Analog Signal Processing | 29J, 02C 04 B | 05Guided02 under progress | 02 | Y | Regular |
| Dr. Neelam Srivastava | AJXPS4156R | Ph.D | Lucknow University | (2004) | 22-08-1986 | Professor | 2009 | 22-08-1986 | ECE | Microwave Engg. | 34J, 42C 03 B | 02Guided05 under progress | 01 | Y | Regular |
| Dr. S.R.P.Sinha | AJTPS1263M | Ph.D | Lucknow University | (2004) | 29-04-1991 | Professor | 2013 | 19-04-1991 | ECE | Microelectronics /VLSI Devices and Circuit | 12J 02C | 01 under progress | NIL | Y | Regular |
| Dr. Subodh Wairya | AADPW3496R | Ph.D | MNNIT | (2012) | 06-05-1996 | Professor | 2012 | 06-05-1996 | ECE | VLSI Design | 34J 23C 03B | 01Guided06 under progress | 01 | Y | Regular |
| Dr. RCS Chauhan | ANGPC1919F | Ph.D | AKTU (HBTI) | (2015) | 24-08-2017 | Associate Professor | 2017 | 22-08-2017 | ECE | Optical Communication | 08J 07C | 01 under progress | NIL | Y | Regular |
| Dr. Rajiv Kumar Singh | BMHPS8104F | Ph.D | IIT BHU | (2011) | 30.10.2017 | Assist Professor | NA | 30-10-2017 | ECE | Microwave Engg. | 44J 29C | 02 under progress | NIL | Y | Regular |
| Er. Amit Kumar | ARSPK3083G | M.Tech | MNNIT | (2000) | 22-04-2008 | Assist Professor | NA | 22-04-2008 | ECE | Control System | 02J 05C | NA | NA | Y | Regular |
| Er. Abhishek Shrivastava | KQYPS1403P | M.Tech | IIT ISM Dhanbad | (2018) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | Electronics Communication | | NA | NA | Y | Contract |
| Er. Manisha Rautela | COTPM3903B | M.Tech | IIT ISM Dhanbad | (2018) | 14-08-2018 | Cont. Faculty | NA | 14-08-2018 | ECE | Electronics Communication | | NA | NA | Y | Contract |
| Er. Sushma Dwivedi | BRLPD7641H | M.Tech | NIT Kurukshetra | (2017) | 16-08-2018 | Cont. Faculty | NA | 16-08-2018 | ECE | Electronics Communication | | NA | NA | N | Contract |
| Er. Pradeep Kumar Verma | ASXPV2039B | M.Tech | NIT Kurukshetra | (2017) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | VLSI Design | 02C | NA | NA | Y | Contract |
| Er. Alok Kumar Jain | AQSPJ4847N | M.Tech | NIT Suratkal | (2018) | 11-08-2018 | Cont. Faculty | NA | 11-08-2018 | ECE | Communication Enginnering | 01J 01C | NA | NA | Y | Contr. |

FACULTY INFORMATION AND CONTRIBUTIONS

## Faculty Information and Contributions in the Department CAYm1(2017-18)

| Name of the Faculty Member Date of Birth | PAN | Qualification | | | Association with the Institution | Designation | Date on which designated as Professor/ Associate professor | Date of Joining the Institution | Department | Specialization | Academic Research | | | Associated (Y/N) Date of Leaving if | Nature of Association (Regul;ar/ Contract) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Degree (highest degree) Year | University | Year of Attainment of higher qualification | | | | | | | Research Paper Publications | Ph.D. Guidance | Receiving Ph.D. during the ssessment | | |
| Dr. V. K. Singh | ACVPS2190J | Ph.D | UPTU | (2004) | 18-10-1986 | Professor | 2004 | 18-10-1986 | ECE | Analog Signal Processing | 29J, 02C 04 B | 05Guided02 under progress | 02 | Y | Regular |
| Dr. Neelam Srivastava | AJXPS4156R | Ph.D | Lucknow University | (2004) | 22-08-1986 | Professor | 2009 | 22-08-1986 | ECE | Microwave Engg. | 34J, 42C 03 B | 02Guided05 under progress | 01 | Y | Regular |
| Dr. S.R.P.Sinha | AJTPS1263M | Ph.D | Lucknow University | (2004) | 29-04-1991 | Professor | 2013 | 19-04-1991 | ECE | Microelectronics /VLSI Devices and Circuit | 12J 02C | 01 under progress | NIL | Y | Regular |
| Dr. Subodh Wairya | AADPW3496R | Ph.D | MNNIT Allahabad | (2012) | 06-05-1996 | Professor | 2012 | 06-05-1996 | ECE | VLSI Design | 34J 23C 03B | 01Guided06 under progress | 01 | Y | Regular |
| Dr. RCS Chauhan | ANGPC1919F | Ph.D | AKTU (HBTI) | (2015) | 24-08-2017 | Associate Professor | 2017 | 22-08-2017 | ECE | Optical Communication | 08J 07C | 01 under progress | NIL | Y | Regular |
| Er. Parul Dwivedi | BJRPD2180F | M.Tech | IIT Kanpur | (2017) | 31.08/01.09.2017 | Assist Professor | NA | 31-08-2017 | ECE | Microwave Engg. | | | NIL | Y | Regular |
| Dr. Rajiv Kumar Singh | BMHPS8104F | Ph.D | IIT BHU | (2011) | 30.10.2017 | Assist Professor | NA | 30-10-2017 | ECE | Microwave Engg. | 44J 29C | 02 under progress | NIL | Y | Regular |
| Er. Amit Kumar | ARSPK3083G | M.Tech | MNNIT Allahabad | (2000) | 22-04-2008 | Assist Professor | NA | 22-04-2008 | ECE | Control System | 02J 05C | NA | NA | Y | Regular |
| Er Sushil Kumar Gupta | BOHPG6223F | M.Tech | MMMEC Gorakhpur | (2013) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Digital System | 2J | NA | NA | Y | Contract |
| Er. Pankaj Singh | EACPS5088A | M.Tech | AKTU HBTI,Kanpur | (2014) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Electronics Communication | 1J | NA | NA | Y | Contract |
| Er. Tulika Agrawal | AKIPA8245P | M.Tech | Allahabad Univ. | (2012) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Communication Engineering | 2J | NA | NA | Y | Contract |
| Er. Pooja Gupta | BHDPG3448R | M.Tech | AKTU | (2015) | 24-07-2017 | Cont. Faculty | NA | 24-07-2017 | ECE | Communication Engineering | 1J | NA | NA | Y | Contract |
| Er. Sunny Paswan | BQMPP1435K | M.Tech | IIT BHU | (2014) | 06-08-2015 | Cont. Faculty | NA | 06-08-2015 | ECE | Microwave engineering | 1C | NA | NA | N | Contract |

FACULTY INFORMATION AND CONTRIBUTIONS

**Faculty Information and Contributions in the Department CAYm2(2016-17)**

| Name of the Faculty Member | PAN | Qualification | | | Association with the Institution | Designation | Date on which designated as Professor/ Associate Professor | Date of Joining the Institution | Department | Specialization | Academic Research | | | Associated (Y/N) Date of Leaving, if | Nature of Association (Regular/ Contract) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Degree (highest degree) | University | Year of Attainment of higher qualification | | | | | | | Research Paper Publications | Ph.D. Guidance | Receiving Ph.D. during the Assessment | | |
| Dr. V. K. Singh | ACVPS2190J | Ph.D | UPTU | (2004) | 18-10-1986 | Professor | 2004 | 18-10-1986 | ECE | Analog Signal Processing | 29J, 02C 04 B | 05Guided02 under progress | NA | Y | Regular |
| Dr. Neelam Srivastava | AJXPS4156R | Ph.D | Lucknow University | (2004) | 22-08-1986 | Professor | 2009 | 22-08-1986 | ECE | Microwave Engg. | 34J, 42C 03 B | 02Guided05 under progress | NA | Y | Regular |
| Dr. S.R.P.Sinha | AJTPS1263M | Ph.D | Lucknow University | (2004) | 29-04-1991 | Professor | 2013 | 19-04-1991 | ECE | Microelectronics /VLSI Devices and Circuit | 12J 02C | 01 under progress | NA | Y | Regular |
| Dr. Subodh Wairya | AADPW3496R | Ph.D | MNNIT Allahabad | (2012) | 06-05-1996 | Professor | 2012 | 06-05-1996 | ECE | VLSI Design | 34J 23C 03B | 01Guided06 under progress | NA | Y | Regular |
| Er. Amit Kumar | ARSPK3083G | M.Tech | MNNIT Allahabad | (2000) | 22-04-2008 | Assist Professor | NA | 22-04-2008 | ECE | Control System | 02J 05C | NA | NA | Y | Regular |
| Er. Piyush Singh | FNQPS0621R | M.Tech | NIT Srinagar | (2012) | 01-08-2012 | Cont. Faculty | NA | 01-08-2012 | ECE | Embedded System | 1J | NA | NA | Y | Contract |
| Er Sushil Kumar Gupta | BOHPG6223F | M.Tech | MMMEC Gorakhpur | (2013) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Digital System | 2J | NA | NA | Y | Contract |
| Er. Pankaj Singh | EACPS5088A | M.Tech | AKTU HBTI,Kanpur | (2014) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Electronics Communication | 1J | NA | NA | Y | Contract |
| Er. Tulika Agrawal | AKIPA8245P | M.Tech | Allahabad Univ. | (2012) | 02-08-2016 | Cont. Faculty | NA | 02-08-2016 | ECE | Communication Engineering | 2J | NA | NA | Y | Contract |
| Er. Chandna Pandey | CPGPP2104H | M.Tech | Amity Univ | (2015) | 02-08-2016 | Cont. Faculty | NA | 02-08-2015 | ECE | Communication Engineering | 6J,3C | NA | NA | Y | Contract |
| Er. Sunny Paswan | BQMPP1435K | M.Tech | IIT BHU | (2014) | 06-08-2015 | Cont. Faculty | NA | 06-08-2015 | ECE | Microwave engineering | 1C | NA | NA | Y | Contract |

FACULTY INFORMATION AND CONTRIBUTIONS

## 5.1 Student-Faculty Ratio (SER) (20)

*(To be calculated at Department Level)*

No. of UG Programs in the Department (n): 01

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

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

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

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

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

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

**Student Faculty Ratio (SFR) = S/F**

| Year | CAY (2018-19) | CAYm1 (2017-18) | CAYm2 (2016-17) |
|---|---|---|---|
| u.1.1 | 60+12 | 60+12 | 60+10 |
| u.1.2 | 72 | 70 | 72 |
| u.1.3 | 70 | 72 | 72 |
| UG1 | 214 | 214 | 214 |
| Total no. of students in the Department(S) | 214 | 214 | 214 |
| No. of faculty in the Department (F) | 10 | 11 | 8 |
| Student faculty ratio(SFR) | SFR1= 21.4 | SFR1= 19.45 | SFR2=26.75 |
| Average SFR | | (SFR1+ SFR2 +SFR3)/3= **22.53** | |

Table.5.1

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

<=15 20 Marks
<=17 18 Marks
<=19 16 Marks
<=21 14 Marks
<=23 12 Marks
<=25 10 Marks
<=25.0 00 Marks

Note: Minum 75% should be regular/full time faculty and the remaning shell be Contractual Faculty as per AICTE norms and standards.

The contractual faculty(doing away with the terminology of cisiting/adjunt faculty, whatsoever)who have taught for 2 consecutive semester in the corresponding academic year on full time basis shall be considered for the purpose of calculation in the Student faculty ratio.

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

| S.No | Total number of regular faculty in the department | Total number of contractual faculty in the department |
|---|---|---|
| CAY 2018-19 | 07 | 05 |
| CAYm1 2017-18 | 08 | 05 |
| CAYm2 2016-17 | 05 | 06 |

Table 5.1.1

## 5.2. Faculty Cadre Proportion (20)

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

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

F2: Number of Associate Professors required = 2/9 x Number of Faculty required to comply with 15:1 Student-Faculty ratio based on no. of students (N) as per 5.1

F3: Number of Assistant Professors required = 6/9 x Number of Faculty required to comply with 201 Student-Faculty ratios based on no. of students (N) as per 5.1

| Year | Professors | | Associate Professors | | Assistant Professors Regular | | Cadre Ratio Marks |
|---|---|---|---|---|---|---|---|
| | Required F1 | Available | Required F2 | Available | Required F3 | Available | |
| CAY 2018-19 | 1.2 | 04 | 2.4 | 01 | 7.2 | 02 | 20 |
| CAYm1 2017-18 | 1.2 | 04 | 2.4 | 01 | 7.2 | 03 | 20 |
| CAY*m*2 2016-17 | 1.2 | 04 | 2.4 | 00 | 7.2 | 01 | 20 |
| Average Numbers | RF1=1.2 | AF1=04 | RF2= 2.4 | AF2=0.66 | RF3=7.2 | AF3=2 | **20** |

**Table.5.2**

$$\text{Cadre Ratio Marks} = \left(\frac{AF1}{RF1} + \frac{AF2}{RF2} x 0.6 + \frac{AF3}{RF3} x 0.4\right) x 10 = 20$$

- If AF1 = AF2 = 0 then zero marks
- Maximum marks to be limited if it exceeds 20
- Example:Intake = 180; Required number of Faculty : 09; RF1=1, RF2=2 and RF3=6
- Case1: AF1/RF1 = 1; AF2/RF2 = 1; AF3/RF3 = 1; Cadre proportion marks = (1+0.6+0.4)x10 = 20
- Case2: AF1/RF1=1; AF2/RF2=3/2; AF3/RF3=5/6; Cadre proportion marks= (1+0.9+0.3)x10 = limited to 20
- Case3: AF1/RF1=0; AF2/RF2=1/2; AF3/RF3=8/6; Cadre proportion marks = (0+0.3+0.49) x10 = 8.3

### 5.3. Regular Faculty Qualification (20)

FQ = 2.0x[(10X+4Y)/F)] where

X is no.of regular faculty with Ph.D.,

Y is no.of regular faculty with M. Tech.,

F is no. of regular faculty required to comply 20:1 Faculty Student ratio (no.of facultyand no.of students required are to be calculated as per 5.1)

| | **X** | **Y** | **F** | **FQ=2.0 x[(10X+4Y)/F)]** |
|---|---|---|---|---|
| CAY 2018-19 | 06 | 01 | 11 | 11.62 |
| CAYm1 2017-18 | 06 | 02 | 11 | 12.36 |
| CAYm2 2016-17 | 04 | 01 | 11 | 8 |
| Average Assessment | | | | **11.96** |

Table.5.3

## 5.4. Faculty Retention (10)

No. of regular faculty members in CAY m2= 05 CAYm1=08 CAY=08

| Years | Total no. of Faculty | Total no. of Faculty Retention | Percentage of Faculty members retained during the period of three academic years keeping CAYm3 as base year |
|---|---|---|---|
| CAY 2018-19 | 08 | 07 | 87.5% |
| CAYm1 2017-18 | 08 | 08 | 100% |
| CAYm2 2016-17 | 05 | 05 | 100% |
| | | | 95.67= 10 Marks |

Table 5.4a

| (% of faculty retained during the period of assessment keeping CAYm3 as base year) | **Marks** |
|---|---|
| >= 90% of required Faculty members retained during the period of three academic years keeping CAY*m*3 as base year | 10 |
| >= 75% of required Faculty members retained during the period of three academic years keeping CAY*m*3 as base year | 08 |
| >= 60% of required Faculty members retained during the period of three academic years keeping CAY*m*3 as base year | 06 |
| >= 50% of required Faculty members retained during the period of three academic years keeping CAY*m*3 as base year | 04 |
| <50% of required Faculty members retained during the period of three academic years keeping CAY*m*3 as base year | 0 |

Table5.4b

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

| Name Of Faculty | Qualification | Area of specialization | Areas of Research Interest |
|---|---|---|---|
| Dr. V.K. Singh | PhD | Analog Signal Processing and Signal generation | Analog Signal Processing and Signal generation VLSI, CADTesting |
| Dr. Neelam Srivastava | PhD | Microwave Engineering | MicrowaveCircuits, OpticalCommunication, Wireless & Mobile Communication |
| Dr. S.R.P. Sinha | PhD | Microeletronics, VLSI Technology. | VLSI Technology and Device Modeling |
| Dr. Subodh Wairya | PhD | VLSI Design & High Speed Network | DSP VLSI, CAD Testing, Nano Technology |
| Dr. RCS Chauhan | PhD | Optical and Digital Communication | Computernetworks, Bio-signal Processing, |
| Er. Amit Kumar | M.Tech. | Control & instrumentation | Microcontroller design, Embedded System ,Control system design |
| Dr. R K Singh | PhD | Microwave Engineering | Microwave Circuits, RF Communication, Antenna Design |

**Table 5.5**

### 5.6. Innovations by theFacultyinTeaching and Learning (10)

**Content Based Question Making:** Students are made to develop questions based on the topic and then taught accordingly how to answer the questions

**Video Based Student Enhancement:** Application videos of the topics are showed, based on which students get a real life exposure of the scenario where the concepts they have learned is applied.

**Simulated Software Based Learning:** Topics are simulated using software tools by which the students can directly relate to the topics being taught.

**Brainstorming:** The students are made to discuss the topics before starting and the lectures are based on the discussions made with the Faculty. Teaching and learning shall be summarized as per the following description. Contributions to teaching and learning are activities that contribute to the improvement of student learning. These activities may include innovations not limited to use of ICT, instruction delivery, instructional methods, assessment, evaluation and inclusive class rooms that lead to effective, efficient and engaging instruction. Any contributions to teaching and learning should satisfy the following criteria:

| Tools | Methods | Metaphor |
|---|---|---|
| Power Point Presentation by referring E-learning videos | Easy to prepareand it can beprepared with manyof the popular techniques. | **Slide based** |
| DemonstrationVideosand Lectures | Easy to prepareand download | **Web Based learning** |

**Table 5.6**

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

A Faculty Scores Maximum Five Points for Participation
Participation In 2 To 5 Days Faculty/Faculty Development Program: 3Points
Participation> 5Days Faculty/Faculty Development Program: 5Points

| Name of theFaculty | Max.5 per Faculty | | |
|---|---|---|---|
| | **CAYm1 2017-18** | **CAY*m*2 2016-17** | **CAYm3 2015-16** |
| Dr. VK Singh | 05 | 05 | 05 |
| Dr. Neelam Srivastava | 05 | 05 | 05 |
| Dr. Subodh Wairya | 03+05 | 05 | 05 |
| Dr SRP Sinha | 03+03 | 05 | 05 |
| Dr. RCS Chauhan | 05 | 0 | 0 |
| Dr. Rajiv Kumar Singh | 03+05 | 0 | 0 |
| Er. Amit Kumar | 03+05 | 05 | 05 |
| *RF*= Numberof Facultyrequiredtocomply with20:1Student-Facultyratioas per 5.1 | 11 | 11 | 11 |
| Assessment=3× (Sum/0.5RF) (Markslimitedto15) | 15 | 15 | 15 |
| **Average assessment over three years(Marks limited to 15)=** | | | 15 |

***TableB.5.7***

## 5.8. Regular Research and Development (75)

### 5.8.1. Academic Research(20)

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

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

| Academic year | Total no of Publication Journal Books, Conference, Book Chapter | Ph.D Enrolled Guided | Ph.D Awarded |
|---|---|---|---|
| CAY (2018-19) | 16 | 03 | 00 |
| CAYm1 (2017-18) | 18 | 04 | 02 |
| CAYm2 (2016-17) | 15 | 08 | 02 |

Journals books publication list as given below

| Sr. No. | Name of the Faculty | Paper Title & Journal Details |
|---|---|---|
| 1. | Dr. VK Singh | Journal Books Conference List Attached |
| 2. | Dr. Neelam Srivastava | Journal, Books List Attached |
| 3. | Dr. Subodh Wairya | Journal Books Conference List Attached |
| 4. | Dr SRP Sinha | Journal, Conference List Attached |
| 5. | Dr. RCS Chauhan | Journal, Conference List Attached |
| 6. | Dr. Rajiv Kumar Singh | Journal, Conference List Attached |
| 7. | Er. Amit Kumar | Journal Books Conference List Attached |

Dr. V. K. Singh

| Name of Faculty | Type of Publication | Publication details | Publication |
|---|---|---|---|
| V. K Singh | Papers published in refereed International / National Journals | A. K. Singh and V. K. Singh, 2014, 'Modeling of DSDV Routing Protocol for Ad Hoc networks using Event-B', *International Journal of Computer Engineering and Technology (IJCET),* vol. 5, no. 3, pp. 108-116. | 2014 |
| | | A. K. Singh and V. K. Singh, 2014, 'Formal Languages: A comparison of Process Algebra and Model Oriented Approach', *International Journal of Computer Engineering and Technology (IJCET),* vol. 5, no. 3, pp. 1-8. | 2014 |
| | | Neeraj Kumar Misra, Subodh Wairya and Vinod Kumar Singh, 2014, 'Evolution of structure of some binary group-based n-bit comparator, n-to-2n decoder by reversible technique', *International Journal of VLSI design & Communication Systems (VLSICS)*, vol. 5, no. 5, pp 9-22. | 2014 |
| | | D. K. Srivastava, V. K. Singhand R. Senani, 2015, 'New Very Low Frequency Oscillator Using only a Single CFOA', *American Journal of Electrical and Electronic Engineering,* vol. 3, no.1, pp. 1-3. | 2015 |
| | | D. K. Srivastava, V. K. Singh and R. Senani, 2015, 'Novel single-CFOA-based sinusoidal oscillator capable of absorbing all parasitic impedances', *American Journal of Electrical and Electronic Engineering,* vol. 3, no. 3, pp. 71-74. | 2015 |
| | | Manoj Kumar Jain, V. K. Singh and R. Senani, 2015, 'A bibliography of the work done on Externally-linear-internally-nonlinear circuits during 1979-2014, *American Journal of Electrical and Electronic Engineering,* vol. 3, no. 3, pp. 64-71. | 2015 |
| | | Neeraj Kumar Misra, Subodh Wairya and Vinod Kumar Singh, 2015 'Approaches to Design Feasible Error Control Scheme Based on Reversible Series Gates', *European Journal of Scientific Research*, vol. 129, no. 3, pp 224-240. | 2015 |
| | | Neeraj Kumar Misra, Subodh Wairya and Vinod Kumar Singh, 2015, 'Frame of Reversible BCD Adder and Carry Skip BCD Adder and Optimization Using New Reversible Logic Gates for Quantum-Dot Cellular Automata', *Australian Journal of Basic and Applied Sciences*, vol. 9, no. 31, pp. 286-298. | 2015 |
| | | Neeraj Kumar Misra, SubodhWairya and Vinod Kumar Singh, 2016 "Approach to Design a High Performance fault-Tolerant Reversible ALU", *International Journal of Circuits and Architecture design*, vol. 2, no. 1, pp. 83-103. | 2016 |

| | | | |
|---|---|---|---|
| | | D. R. Bhaskar, D. Prasad, R. Senani, M. K. Jain, V. K. Singh and D. K. Srivastava, 2016, 'New fully-uncoupled current controlled sinusoidal oscillator employing grounded capacitors',*American Journal of Electrical and Electronic Engineering,* vol. 4, no. 3, pp. 81-84. | 2016 |
| | | M. K. Jain and V. K. Singh, 2016, 'New Log-domain first order multifunction filter using MOSFET in weak inverson', *Circuits and systems,* vol. 7, pp. 3522-3530. | 2016 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh, 2014, 'An Inventive Design of 4*4 Bit Reversible NS Gate', IEEE Int. Conf. on Recent Advances and Innovation in Engineering (ICRAIE-2014), pp: 1-6. | 2014 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, and Vinod Kumar Singh, 2015, 'Optimized Approach for Reversible Code Converters Using Quantum Dot Cellular Automat', Proc 4th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA), Springer India, pp. 367-378. | 2015 |
| | | Raj Senani, D. R. Bhaskar, V. K. Singh and R. K. Sharma, 'Sinusoidal Oscillators and Waveform Generators using Modern Electronics Circuit Building Blocks', 2016, ISBN 978-3-319-23711-4, 978-3-319-23712-1. | 2016 |

## Dr. Subodh Wairya

| Name of Faculty | Type of publication | Publication details | Year of |
|---|---|---|---|
| Subodh Wairya | Journal Paper | Divya Tripathi and Subodh Wairya, "Performance Evaluation of Low Power Carry Save Adder for VLSI Applications" International Journal of VLSI design & Communication Systems (VLSICS) vol. , no. , pp. 29-48, June 2018. | 2018 |
| | Journal Paper | A Singh, MK Jain, S Wairya,Novel Lossless Grounded and Floating Inductance Simulators Employing a Grounded Capacitor Based on CC-CFA,Journal of Circuits, Systems and Computers, 1950093 | 2018 |
| | Conference Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, Bandan Boi., 2017, Novel parity preserving reversible Binary-to-BCD code converter with testability of building blocks in quantum circuit, In: Proceedings of the 2nd International Conference on Computational Intelligence & Informatics (ICCII-2017). Advances in Intelligent Systems and Computing, Springer (AISC), Index No. 1375. *Lecture Notes in Computer Science LNCS, Springer*. | 2018 |
| | Conference Paper | Ritesh Singh, Neeraj Kumar Misra, Subodh Wairya, BandanBoi., Implementation of Non-Restoring Reversible Divider Using a Quantum Dot Cellular Automata, In J. Nayak, et al., (eds) Proceedings of the 4th International Conference on Computational Intelligence in Data Mining (ICCIDM-2017). Advances in Intelligent Systems & Computing, Springer (AISC), (In Press) | 2017 |
| | Book/Book Chapters Published In Springer | Neeraj Kumar Misra, Subodh Wairya, Bibhash Sen., Design and Testability of Diverse Reversible Error Control Circuits, LAP Lambert Academic Publishing German, Pages 107, DOI: 978-620-2-01508-0. | 2017 |
| | Book/Book Chapters Published In Springer | Neeraj Kumar Misra, Subodh Wairya, V. K. Singh., 2016, Optimized Approach for Reversible Code Converters Using Quantum Dot Cellular Automata. In: Das S., Pal T., Kar S., Satapathy S., Mandal J. (eds) Proceedings of the 4th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA),Advances in Intelligent Systems and Computing, Springer, Vol 404. pp 367-378. | 2016 |
| | Journal Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, "Novel Tree Structure Based Conservative, Reversible BCD Adder With Added Testability In Quantum Circuits", *Quantum Matter, American Scientific Publisher* (Valencia, California, USA), | 2017 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Bibhash Sen, "Design of conservative, reversible sequential logic for cost efficient emerging nano circuits with enhanced testability", *Ain Shams Engineering Journal, Elsevier (*Amsterdam*, Netherlands)*, 11 pages, pp. 1-11, DOI: 10.1016/j.asej.2017.02.005. | 2017 |
| | Journal Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, Towards designing efficient reversible binary code converters and a dual-rail checker for emerging nanocircuits. *Journal of Computational Electronics, Springer (New York, USA)*, 17 pages, pp. 1-17, DOI: 10.1007/s10825-017-0960-4. | 2017 |
| | Journal Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, Bandan Boi, "Testable Novel Parity-Preserving Reversible Gate and Low-Cost Quantum Decoder Design in 1D Molecular-QCA", *Journal of Circuits, Systems and Computers, World Scientific (Singapore)*, 26 pages, pp. 1-26, DOI: 10.1142/S0218126617501456. | 2017 |
| | Journal Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, Novel Conservative Reversible Error Control Circuits Based On Molecular-QCA', *International Journal of Computer Applications in Technology, Inderscience Publishers* (Switzerland), Vol. 56, No. 1, 2017. | 2017 |
| | Journal Paper | Neeraj Kumar Misra, Bibhash Sen, Subodh Wairya, "Designing Conservative Reversible N-Bit Binary Comparator for Emerging Quantum-Dot Cellular Automata Nano Circuits", Journal of Nano-engineering and Nano-manufacturing *American Scientific Publisher (Valencia, California, USA)*, 16 pages, Vol. 6, No. 3, pp. 201-216, DOI:10.1166/jnan.2016.1286 | 2016 |
| | Conference Paper | Shraddha Pandey, Sonali Singh and Subodh Wairya, "QCA IMPLEMENATATION OF XOR BASED FULL ADDER CIRCUIT USING CLOCK-ZONE BASED CROSSOVER" in National Conference Emerging Trends in Electrical & Electronics Engineering (NCETEEE'16) | 2016 |

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| | | ,organized by Department of Electrical Engineering &Department of Electronics & Communication Engineering Institute of Engineering & Technology, Lucknow, 19-20 August, 2016. | |
| | Conference Paper | Shashank Gupta and Subodh Wairya," Gate Diffusion Input (GDI): A Technique for Enhancing Performance of the Arithmetic Circuit" National Conference Emerging Trends in Electrical & Electronics Engineering (NCETEEE'16) ,organized by Department of Electrical Engineering &Department of Electronics & Communication Engineering Institute of Engineering & Technology, Lucknow, 19-20 August, 2016. | 2016 |
| | Journal Paper | Prateek Agrawal, S.R.P. Sinha, Neeraj Kumar Misra, and Subodh Wairya "Design of Quantum Dot Cellular Automata Based Parity Generator and Checker with Minimum Clocks and Latency" International Journal of Modern Education and Computer Science (IJMECS) vol. 8, no. 8, pp 11-20, August 2016. | 2016 |
| | Journal Paper | Sonali Singh, Shraddha Pandey and Subodh Wairya, "Modular Design of $2^n$:1 Quantum Dot Automata Multiplexers and its Application via Clock zone based Crossover" International Journal of Modern Education and Computer Science (IJMECS) vol. 8, no. 7, PP 41-52, July 2016, | 2016 |
| | Journal Paper | Shraddha Pandey, Sonali Singh and Subodh Wairya, "Designing an Efficient Approach for JK and T flip-flop with Power Dissipation Analysis using QCA" International Journal of VLSI design & Communication Systems (VLSICS) vol.7, no.3, pp. 29-48, June 2016. | 2016 |
| | Journal Paper | Shashank Gupta and Subodh Wairya, "Hybrid Code Converters using Modified GDI Technique" International Journal of Computer Applications, vol. 143, no.7, pp. 12-19, June 2016. | 2016 |
| | Journal Paper | Shashank Gupta and Subodh Wairya, "A GDI Approach to Various Combinational Logic Circuits in CMOS Nano Technology" International Journal of Engineering and Computer Science ISSN: 2319-7242 vol. 5, Issue 4 April 2016, pp. 16243-16247. | 2016 |
| | Journal Paper | Prateek Agrawal, S.R.P. Sinha, Subodh Wairya, "Quantum Dot Cellular Automata Based Parity Generator And Detector: A Review", International Journal of Electronics and Communication Engineering (IJECE), vol. 5, Issue 3, pp. 41-50. | 2016 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh "Approaches to Design a High Performance Fault-Tolerant Reversible ALU," International Journal of Circuits and Architecture Design, vol. 2, Issue 1, pp. 83-103, Inderscience Publishers (IEL), 2016. | 2016 |
| | Book/Book Chapters Published In Springer | Neeraj Kumar Misra, Subodh Wairya, and V. K. Singh. "Optimized Approach for Reversible Code Converters Using Quantum Dot Cellular Automata." Advances in Intelligent Systems and Computing (AISC), pp. 367-378, 2015 Springer India. | 2015 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, and V. K. Singh."Frame of Reversible BCD Adder and Carry Skip BCD Adder and Optimization Using New Reversible Logic Gates for Quantum-Dot Cellular Automata" Australian Journal of Basic and Applied Sciences, vol. 9, issue 31, 2015, pp. 286-298. | 2015 |
| | Journal Paper | Vijata, Subodh Wairya, "A Study of Two Stage Operational Transconductance Amplifier using Floating gate MOSFET", International Journal Of Engineering And Computer Science, vol 4, issue 10, Oct 2015, pp. 14643-14648. | 2015 |
| | Journal Paper | Neeraj Kumar Misra, Mukesh Kumar Kushwaha, SubodhWairya and Amit Kumar," Feasible methodology for optimization of a novel reversible binary compressor" International Journal of VLSI design & Communication Systems (VLSICS) vol. 6, no.4, August 2015. | 2015 |
| | Journal Paper | Neeraj Kumar Misra, Mukesh Kumar Kushwaha, SubodhWairya and Amit Kumar," Cost Efficient Design of Reversible Adder Circuits for Low Power Applications" International Journal of Computer Applications vol. 117, no.19, May 2015. | 2015 |
| | Journal Paper | Avinash Singh, Subodh Wairya, " A 16-Bit Ripple Carry Adder Design Using High Speed Modified Feedthrough Logic", International Journal of Engineering And Computer Application (IJECS), vol. 4, issue 5, pp. 12058-12061, May 2015. | 2015 |
| | Journal Paper | P Sharma, Subodh Wairya, " A Feasible Approach to Design a CMOS Domino Circuit at Low Power VLSI Application", International Journal Of Engineering And Computer Science, vol 4, issue 7, pp. 13055-13060, July 2015. | 2015 |
| | Journal Paper | Avinash Singh, Subodh Wairya, "An Improved Feedthrough Logic for Low Power and High Speed Arithmetic Circuits", International Journal of Science and Research (IJSR), vol. 4, issue 5, pp-2277-2280, 2015. | 2015 |
| | Journal Paper | AnkitaAgarwal &Subodh Wairya "Cross layer Optimization of Optical Node in High Speed Network" International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181 vol. 4, issue 11, pp 599-603, November-2015. | 2015 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh "Approaches to Design Feasible Error Control Scheme Based on Reversible Series Gates," European Journal of Scientific Research, vol. 129, no. 3 February, 2015, pp.224 – 240. | 2015 |
| | Conference Paper | Neeraj Kumar Misra, Subodh Wairya, and V. K. Singh. "Optimized Approach for Reversible Code Converters Using Quantum Dot Cellular Automata." In Proceedings of the 4th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA) 2015, National Institute of Technology (NIT), Durgapur, India pp. 367-378, Oct. 2015. | 2015 |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh "Evolution of structure of some binary group-based n-bit comparator, n-to-2n decoder by reversible technique," International Journal of VLSI design & Communication Systems (VLSICS),AIRCC Publication, vol.5, no.5, Oct 2014. | 2014 |
| | Journal Paper | Monika Jain,Subodh Wairya, "Performance Evaluation of Low Power Dynamic Circuit Using Footed Diode Domino Logic, "International Journal of Engineering and Computer Science | 2014 |

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| | | (IJECS), vol.3, no. 10, pp., 1-4, Oct. 2014. | |
| | Journal Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh "Preternatural Low-Power Reversible Decoder Design in 90 nm Technology Node," International Journal of Scientific & Engineering Research, vol. 5, Issue 6, pp: 969-978, June 2014, | 2014 |
| | Conference Paper | Neeraj Kumar Misra, Subodh Wairya, Vinod Kumar Singh "An Inventive Design of 4x4 Bit Reversible NS Gate," IEEE International Conference on Recent Advances and Innovations in Engineering (ICRAIE-2014) pp.1-6, May 2014 | 2014 |
| | Conference Paper | Ravi Prakash Verma, Subodh Wairya, Prateek Gargeya and Mohd. Irshad Khan,"Designing Microstrip Band-pass Filter at 6 GHz" Paper presented in TEQIP-II Sponsored National Conference on Advances in Computer Communication and Embedded Systems,21-22 March2014, organized by Department of Electronics and Communication Engineering of M.M.M University of Technology, Gorakhpur, U.P., India. | 2014 |

## Dr Rajiv Kumar Singh

| Name of faculty | Type of publication | Publication details | Year of publication |
|---|---|---|---|
| | International Journal Publications | R.K.Singh, "Large-signal analytical approach to disc-loaded gyro-TWT amplifier," IET Microw. Antennas Propagation., vol. 9, no. 11, pp. 1-7, July 2015, ISSN 1751-8725, DOI: 10.1049/iet-map.2015.0067. (Impact factor: 0.817). | 2015 |
| | | R.K.Singh and Ekta Singh, "Effects of 2.4GHz electromagnetic radiation on morphological and physiological characteristics in Cicer Areitinum" J. Chem. Pharmaceutical Res., vol. 7(10), pp. 61-64, Nov. 2015, ISSN: 0975-7384 (SJR 0.32). | 2015 |
| | | R. K. Singh, "Electron beam positioning in a disc-loaded gyro-TWT amplifier", J. Computational Electronics, 2017, Accepted (In production). | 2017 |
| | | R. K. Singh and Chahat Jain, "Mode Competition and Control in a Vane-Loaded Interaction Structure for Gyrotron", IET Microwaves, Antennas & Propagation, 2017, Communicated. | 2017 |
| | National Journal Publications | R. K. Singh and Chahat Jain, "Analysis of Attenuation Characteristics of a Vane-Loaded RF Interaction Structure for a Gyro-TWT Amplifier", IET Microwaves, Antennas & Propagation, 2017, Communicated. | 2017 |
| | | R.K.Singh, "Fourth-Generation free-space optics," Electronics for you, vol. 46, no. 02, pp. 50, 52, 54, Feb. 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "Managed leased line network," Electronics for you, vol. 46, no. 03, pp. 32, 34, 36, March 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "High speed DWDM technology," Electronics for you, vol. 46, no. 05, pp. 32, 34-36, May 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "How to protect telecom network," Electronics for you, vol. 46, no. 06, pp. 38, 40-41, June 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "FTTH and passive optical network," Electronics for you, vol. 46, no. 9, pp. 58-61, September 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "An introduction to Plesiochronous Digital Hierarchy," Electronics for you, vol. 46, no. 10, pp. 64-66, October 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "SDH: An all purpose digital transport system," Electronics for you, vol. 46, no. 11, pp. 62-64, November 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, Harshit Singh, "Broadband over power line," J. of Telecommunications, vol. 61, issue 1, 21-26, November 2014, ISSN 0497-1388. | 2014 |
| | | R.K.Singh, "How to reduce mobile phone tower radiation," Electronics for you, vol. 46, no. 12, pp. 32, 34, 36-38, December 2014, ISSN 0013-516X. | 2014 |
| | | R.K.Singh, "Broadband internet access using ADSL," Electronics for you, vol. 47, no. 01, pp. 60-63, 64, 66, January 2015, ISSN 0013-516X. | 2015 |
| | | R.K.Singh, "IMT-Advanced requirements and 4G candidate technologies," Electronics for you, vol. 47, no. 4, pp., 40, 42-44, April 2015, ISSN 0013-516X. | 2015 |
| | | R.K.Singh, "Internet traffic management using multi-protocol label switching," Electronics for you, vol. 47, no. 10, pp. 36-39, Oct. 2015, ISSN 0013-516X. | 2015 |
| | | Maniraguha Fidele, Munish Singh, R. K. Singh, and Prabal Gupta, "Peak to average power ratio reduction for OFDM system using different peak windowing and modulation techniques," Far East Journal of Electronics and Communications, 100 Proceedings of SHANNON - 3rd Int. Conf. Comp. Sci. 2016, special vol. 3, part I, 2016, pp. 33-45, ISSN: 0973-7006, DOI: http://dx.doi.org/10.17654/ECSV3PI16033 , SJR (0.43). | 2016 |
| | | Prabal Gupta, R. K. Singh, Maniraguha Fidele, and Balpreet Singh, "Hadamard matrix based selected mapping hybridized with clipping technique for peak to average power ratio reduction in OFDM system using several sub-carriers," Indian J. Sci. Tech., Proceedings of Shannon-100, 3rd Int. Conf. on Computing Sciences (ICCS), Lovely Professional University, Punjab, 8-9 April, 2016, vol. 9(45), pp. 1-5, Dec 2016, | 2016 |
| | | Prabal Gupta, R. K. Singh, Maniraguha Fidele, Balpreet Singh and B.Arun Kumar, "Performance improvement of orthogonal frequency division multiplexing system by reducing peak to average power ratio using FDCSS (Frequency Domain Cyclic Shift Sequence) combined with SLM and clipping technique," Indian J. Sci. Tech., Proceedings of ICICS 2016 – Int. Conf. on Intelligent Circuits and Systems, Lovely Professional University, Punjab, 18-19 Nov. 2016, vol. 9(48), pp. 1-6, Dec. 2016, ISSN 0974-6846, DOI: 10.17485/ijst/2016/v9i48/106866, SJR (0.27). | 2016 |
| | International Conference Publications | Prabal Gupta and R.K.Singh, "A hybridized discrete cosine transform based peak to average power ratio reduction in OFDM system using suboptimal Qth circular shifting phase sequence generated matrix(QSCPM) for selected mapping," IEEE Conference, 2016 International Conference on Computer Communication and Computing (ICCCI-2016), Sri Shakti Inst. of Engg. and Technology, | 2016 |

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| | | Chennai, 7-9 Jan. 2016, pp. 1-5, Print ISBN: 978-1-4673-6679-3, DOI: 10.1109/ICCCI.2016.7480003. | |
| | | R. K. Singh, Chahat Jain, "Eigenvalue and Transmission Characteristics of a Disc-Loaded Interaction Structure for a Gyro-TWT Amplifier," 2016 IEEE 11th International Conference on Industrial and Information Systems (ICIIS), IIT Roorkee, India, 3-4 Dec., 2016, pp. 1-5. | 2016 |
| | | R. K. Singh, Chahat Jain, "EM analysis of vane-loaded RF interaction structure for its potential application in gyrotrons," International Conference on Soft Computing Applications in Wireless Communication (SCAWC), GNDEC, Ludhiana, India, 9-11 March, 2017, pp. 1-7 | 2017 |
| | National Conference Publications | Prabal Gupta, G.C Manna, R. K. Singh, Maniraguha Fidele, Kartik Pant, "Peak to average power ratio reduction of OFDM system using discrete cosine transform based phase sequence for selected mapping," 4th National Conference on Advance Research in Engineering and Sciences (ARES-2016), Dev Bhoomi Group of Institutes, Dehradun, 9th April 2016, pp. 1-4. | 2016 |

Dr. RCS Chauhan

| Name of faculty | Type of publication | Publication details | Year |
|---|---|---|---|
| | | R.C.S. Chauhan, Y.N. Singh, Rachna Asthana, Unipola (Optical) Orthogodes and Their Maximal Clque Sets,Book Vol 1 PP 140, LAP Lambert Academic Publishing. | 2016 |
| | | R.C.S. Chauhan, Y.N. Singh, Rachna Asthana, Design of Minimum Correlated Maximal Clique Sets of One Dimensional Unipolar (Optical) Orthogonal Codes, IEEE Transactions on Information Theory | 2017 |
| | | R.C.S. Chauhan, Y.N. Singh, Rachna Asthana, A Survey to the Optical CDMA Systems - Part I: Optical Orthogonal Encoding, Journal of Computing Technologies | 2016 |
| | | R.C.S. Chauhan, Y.N. Singh, Rachna Asthana, A Survey to the Optical CDMA Systems - Part II: Performance Improvement Schemes, Journal of Computing Technologies | 2016 |

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|---|---|---|---|
| Amit Kumar | Conference Paper | Amit Kumar, Piyush Singh, "Sliding Mode Controlled DC-DC Boost converter" 1st National Power & Energy System Conference (NPESC-2014), KNIT, Sultanpur, 2014. | 2014 |
| Amit Kumar | Conference Paper | Amit Kumar, Sunil Kumar Ojha, "Analysis and Performance Measurement of a step up DC-DC converter for Fuel Cell Applications" 2nd National Power & Energy System Conference (NPESC-2015), KNIT, Sultanpur, 2015. | 2015 |
| | | | |

FACULTY INFORMATION AND CONTRIBUTIONS

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

**Ph.D.Guidance:**

| File Name | Guide Name | Research Scholar | Topic | Univ | Registration | Decision |
|---|---|---|---|---|---|---|
| Ph.D/ECE/14/1374 | Dr. Neelam Srivastava | Manish Singh | "Design Analysis and Performance optimization of Microstrip Antenna" | AKTU | 14/07/2014 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/14/1377 | Dr. Neelam Srivastava | Rupali Singh | "Performance analysis of Cooperative Relay Technique in wireless Communication" | AKTU | 14/07/2014 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/14/1380 | Dr. Neelam Srivastava | Suchita Shukla | "Performanc evaluation and Optimization of Cooperative Spectrum sensing with energy detector in cognitive Radios" | AKTU | 14/07/2014 | Course Work has been completed Permission granted for Thesis submission |
| Ph.D/ECE/14/1399 | Dr. V. K Singh Dr. Subodh Wairya | Amrita Singh | "Analog Signal Processing/Generation Circuits using Current Mode Active Building Blocks" | AKTU | 14/07/2014 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/14/1413 | Dr. Subodh Wairya | Divya Tripathi | "Performance Evaluation of Low power High SpeedDynamic CMOS Logic Circuit for VLSI Application" | AKTU | 14/07/2014 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/15/1903 | Dr. Subodh Wairya Dr. Rajiv Kumar Singh | Raj Vikram Singh | "DWT and nueral network based watermarking for medical images security" | AKTU | 29/07/2015 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/15/1911 | Dr. Neelam Srivastava | Varun Shukla | "Secure wireless communication protocols using cryptography" | AKTU | 29/07/2015 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/16/2047 | Dr. S.R.P Sinha | Anand Kumar Singh | "Optimization of Fin FET for low power and Robust memory cells" | AKTU | 10/03/2016 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/16/2051 | Dr. Neelam Srivastava | Ashish Kumar Rao | "Through put Optimization of energy efficient cooperative system sensing in cognitive radio networks" | AKTU | 10/03/2016 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/16/2055 | Dr. Subodh Wairya | Jyoti Garg | "Power Optimization of Spin Torque Transfer-Magneto Resistive Random Access Memory (STT-MRAM)" | AKTU | 10/03/2016 | Course Work has been completed Progress is satisfactory |
| Ph.D/ECE/16/2058 | Dr. V.K Singh | Raksh Kumar Pandey | "Low Power Operational Transconductance amplifier design for Biomedical | AKTU | 10/03/2016 | Course Work has been completed Progress is satisfactory |

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| | | | applications" | | | |
| Ph.D/ECE/16/2172 | Dr. Subodh Wairya<br>Dr. Rajiv Kumar Singh | Digvijay Pandey | "Performance analysis on text extraction from complex images" | AKTU | 04/11/2016 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/16/2175 | Dr. Subodh Wairya | Shilpi Gupta | "Performance Analysis of Low power MOS Device for digital design" | AKTU | 04/11/2016 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/17/2211 | Dr. Subodh Wairya | Anum Khan | "Performance evaluation of new design methodologies for low power high speed VLSI circuits in nano technology Applications" | AKTU | 12/11/2017 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/17/2212 | Dr. R C S Chauhan | Gayatri Tiwari | "Studies of optical CDMA system" | AKTU | 12/11/2017 | Course Work has been completed |
| Ph.D/ECE/18/2211 | Dr. Rajiv Kr Singh<br>Dr. Subodh Wairya | Vinay Kumar | Beam Wave Interaction in a multi-stage Gyro- Travelling Wave Tube Amplifier | AKTU | 12/09/2018 | Progress is satisfactory |

**Faculty Cum Research Fellow Pursuing Ph.D:**

| File Name | Guide Name | Research Scholar | Topic | University | Date of Registration | Decision |
|---|---|---|---|---|---|---|
| Ph.D/ECE/16/2047 | Dr. S.R.P Sinha | Anand Kumar Singh | "Optimization of Fin FET for low power and Robust memory cells" | AKTU | 10/03/2016 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/16/2051 | Dr. Neelam Srivastava<br>Dr. Rajiv Kr Singh | Ashish Kumar Rao | "Through put Optimization of energy efficient cooperative system sensing in cognitive radio networks" | AKTU | 10/03/2016 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/17/2211 | Dr. Subodh Wairya | Anum Khan | "Performance evaluation of new design methodologies for low power high speed VLSI circuits in nano technology Applications" | AKTU | 12/11/2017 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/17/2212 | Dr. Ram Chandra Singh Chauhan | Gayatri Tiwari | "Studies of optical CDMA system" | AKTU | 12/11/2017 | Course Work has been completed<br>Progress is satisfactory |
| Ph.D/ECE/18/2211 | Dr. Rajiv Kr Singh<br>Dr. Subodh Wairya | Vinay Kumar | Beam Wave Interaction in a multi-stage Gyro- Travelling Wave Tube Amplifier | AKTU | 12/09/2018 | Progress is satisfactory |

### 5.8.2. Sponsored Research (20)

Funded research from outside: (Providealist with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during last three academic years starting from CAYm1):

Amount > 50 Lacs – 20Marks,

Amount > 40 and ≤ 50Lacs – 15Marks,

Amount > 30 and ≤ 40 Lacs – 10Marks,

Amount ≥ 15 and ≤ 30 Lacs – 5Marks,

Amount < 15Lacs – 0Marks

| Sr. No | Project Title | Funding Agency | Sanctioned Amount | Duration |
|---|---|---|---|---|
| 1. | Design and Development of RF interaction structures for high frequency high power microwave sources and amplifier | Council of Science and Technology, UP, India | Rs 11,600,00 | 03 Year |

Many research projectshave been submitted (Applied) to Funded Agency (CST).

### 5.8.3. Development activities (15)

**RESEARCH LABORATORIES**

**EXISTING LABORATORIES:** First and foremost 2 existing laboratories in Electronics and Communication Engineering Department were improved .Improvement was strengthened under industry involvement and Center of Excellence (Texas Instruments). The laboratories which were strengthened are listed as

1. Microcontroller Design Laboratory lab setup for microcontroller lab featuring Advance 8051 microcontroller • Educational Practice Board for C8051F340 (Model - EPB_F340) • All-in-one General Purpose Board (Model - ASK25) • Eclipse based Integrated Development Environment (IDE) Tool

**NEW LABORATORIES:** 4 New laboratories with state of the art facilities were incorporated in Electronics and Communication Engineering department

1. Digital Signal Processing Laboratory All-in -One Educational Practice Board for DSP lab • Model - EPB_C6748 • Model - EPB_C6713 2.
2. Analog Signal Processing Laboratory Hardware component implementation and analysis with Agilent Analog Electronic Lab Solution with Trainer Kit including Oscilloscope, Power supply, Multimeter, GPIB & Kit
3. 3. VLSI Design Laboratory TEQIP II • Software Xilinx ISE System Edition 16.4 • Microwind 3.5 package • System Crafter SC Version • Advance VLSI Proto Board • Xilinx Spartan ® 6FPGA • Xilinx Virtex ® Board with aerial Ethernet cable of 5 V Power supply • CPLD(Xilinx Xc 95108PC84) Development Board TEQIP III • Cadence Virtuoso 6.1.7 (10 user)
4. IoT laboratory Following modules are available: • IOT Node - EPB_1768 • IOT Node - EPB_M4 • All-in- one General Purpose Board • IOT Gateway • Sensor Modules

**4.**

| S.No. | Licensed and Open Source Software Description | Year Of Installation |
|---|---|---|
| 1. | XILINX ISE 14.7 | 2016 |
| 2. | MICROWIND 3.5 | 2016 |
| 3. | SYSTEM CRAFTER SC 2 | 2016 |
| 4. | Scilab (Using Spoken Tutorial MOOCs) | Open Sourse |
| 5. | Cadence Virtuoso 6.1.7(10 user) | 2018-19 |
| 6. | MATLAB (Campuswide License) | 2018-19 |

**INSTRUCTIONAL MATERIALS**

| S.No. | Details |
|---|---|
| 1 | Seminar Class Rooms(Multimedia Projector) |
| 2 | Lab Manual |
| 3 | NPTEL videos |
| 4 | PPT |
| 5 | Assignments |

**WORKING MODELS/CHARTS/MONOGRAMS**

Charts are displayed in all laboratories. The Departmenthas many models created by students and have been displayed in Project Laboratory. These prototype models help the students to understand the working of basics and recent technologies in a better manner. Also, this can be used for better teaching and learning process

| S.No. | Details |
|---|---|
| 1. | Animations |
| 2. | Lab Description Charts |
| 3. | Lab Manuals |

**5.8.4. Consultancy (from Industry) (20)**

Funded research from outside: (Providealist with Project Title, Funding Agency, Amount and Duration)

Funding Amount (Cumulative during last three academic years starting from CAYm1):
Amount > 10 Lacs – 20 Marks,
Amount $\leq$ 10 and $\geq$ 8 Lacs – 15 Marks,
Amount < 8 and $\geq$ 6 Lacs – 10 Marks,
Amount < 6 and $\geq$ 4 Lacs – 5 Marks,
Amount < 4 and $\geq$ 2 Lacs – 2 Marks,
Amount <2 Lacs – 0 Marks

Prof. V. K. Singh involved as consultant in various funded project, Govt of Uttar Pradesh as listed below.

1. Director Technical Board of Director, U.P. Electronics Corporation, Govt of Uttar Pradesh.
2. Member Technical Evaluation Committee, Lap top purchase, Govt of Uttar Pradesh.
3. Member, Technical Evaluation Committee for e lottery of liquors of Govt of Uttar Pradesh.
4. Member, Technical Evaluation Committee for e lottery of wood based industries, forest department of Govt of Uttar Pradesh.

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

Faculty members of Higher Educational Institutions today have to perform a variety of tasks pertaining to diverse roles. In addition to instruction, faculty members need to innovate and conduct research for their self-renewal, keep abreast with changes in technology, and develop expertise for effective implementation of curriculum. They are also expected to provide services to the industry and community for understanding and contributing to the solution of real life problems in industry.

An effective performance appraisal systemfor optimizing the contribution of individual faculty to institutional performance is inplace. Faculty Performance Appraisal form is collected from each faculty in which they need to show their innovations and research for their self-renewal to cope up with changes in technology and develop expertise for effective implementation of curriculam.

**Key points forfaculty appraisalare:**

- Professional Society Membership
- Professional Society Chapter (Student Branch) and the activities
- Q papers of other Universities and Q bank generation
- Books with the latest Editions,well known publishers and Internationally valid authors are to be followed
- Workshops to be organized and attaindent.
- Professional Networking ( Member in BOS, Professional Committee in other University)
- Experiment list is to be revised and to be prepared and circulated in group to avoid duplication
- Additional Content tobe covered otherthan regularcurriculum
- Researchwork andactivities and projects/consultancyto becarried out
- Other initiatives fordepartment andinstitute.
- Industry Interactions and Visits
- Improvements in T-L Process and PedagogicalInnovations
- Publications

**Its implementation and effectiveness:**

- **Faculty Self Assessment:-**

**Implementation: -** The faculty fills a form by which he can know what all short comings he has done in teaching a particular subject.

**Effectiveness: -** The faculty hence becomes aware so as not to repeat the same thing again, as well as it helps him to cover the subject effectively in the coming semesters.

- **Departmental Assessment Committee:**

**Implementation:-**The End semester results are assessed using various criteria as well as compared with the internal exams conducted.

**Effectiveness:-**This helps a faculty to motivate and help students to improve their performance in the subject

**Feedbacks from Students Implementation:- A** meeting is held with the students committee

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

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

Provision of Visiting/Adjunct faculty (1)

Minimum 50 hours per yearb interaction with adjunct faculty from industry/retired professors etc. (9)
(Minimum 50 hours interaction in a year will result in 3 marks for that year; 3marks x 3years = 9marks)

DR. MANOJ KR JAIN

## FACILITIES AND TECHNICAL SUPPORT

| CRITERION 6 | FACILITIES AND TECHNICAL SUPPORT | 80 |
|---|---|---|

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

1. **Departmental laboratories mapping with courses:** Adequate, well-equipped laboratories to meet the curriculum requirements and the POs. Availability of Internet connection and computers in each laboratory are available with technical support within working hours, beyond working hours is available with prior permission and on demand as listed in table given below.
   Equipment to conduct experiment are good and their maintenance are monitored and repaired after regular intervals of time.
   Maximum Number of students per experimental setup =3 to 4 student.
   Size of the laboratories (as per number of students) = 30 to 35 (Student) per batch

| Sr. No. | Name of the Laboratory | No of student per setup (Batch Size) | Name of the important equipment | Weekly utilization status | Technical Manpower Support | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | Name of the Lab Faculty | Name of the technical staff | Designation | Qualification | Lab Size (Area) |
| 1 | Electronics Engineering Lab | 3 | Diode/BJT/FET/OPAMP/Amplifier Exp. Kits, CRO, Function Generator, Power Supplys | 12Hrs | Er. Sonmati Verma M.Tech | Kunwar Singh Ram Gopal | Lab Assistant Lab Attendant | Graduate Intermediate | 990 Sqfeet |
| 2 | Worshop and PCB design Lab | 4 | Transformer Winding Setup, PCB Artwork, Drilling/Shearing Machine , Soldering, LCR Meter | 8Hrs | Er. Sonmati verma M.Tech | Kunwar Singh Ram Gopal | Lab Assistant Lab Attendant | Graduate Intermediate | 870 Sqfeet |
| 3 | Computer Adided design (CAD) Lab | 2 | 20 Sets of Computers , Printer Software, | 12Hrs | Er. Anum Khan M.Tech | Kunwar Singh Jai Krishan | Lab Assistant Lab Attendant | Graduate ITI | 990 Sqfeet |
| 4 | Microprocessor & Microcontroller and Lab | 3 | 8085 Kit, 8086/ MSP 430 exp. kits, 8051/AVR/PIC Microcontroller Exp. Kits, 5 Set of Computers | 12Hrs | Er. Vinay Kumar M.Tech | Tejveer Singh Ram Gopal | Instructor Lab Attendant | Diploma Intermediate | 960 Sqfeet |
| 5 | Embedded System DesignLab | 3 | MSP 430 Microcontroller Exp. Kits, 10 Set of Computers IoT setup | 8Hrs | Er. Anurag Yadav M.Tech | Tejveer Singh Ram Gopal | Instructor Lab Attendant | Diploma Intermediate | 990 Sqfeet |

## FACILITIES AND TECHNICAL SUPPORT

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 6 | Analog Electronics Lab | 3 | Analog Trainer Kit, A/D & D/ A Kits,<br>CRO, Function Generator, Multimeter, Instrumentation Kits | 12Hrs | Er. Jitendra Kr. Shukla M.Tech | P. K. Bhattacha Sarita Gupta | Lab Assistant Lab Attendant | B.Com VIII Pass | 960 Sqfeet |
| 7 | Communication Lab | 3 | 5 Set of Computers, AM/FM/PM/PCM/PWM Exp. Kits, ASK/FSK/Mux Exp. Kits, Delta Modulation and TDM Exp. kits, DSO, Function Generator, Printer | 8Hrs | Er. Gayatri Tiwari | Tejveer Singh Sarita Gupta | Instructor Lab Attendant | Diploma VIII Pass | 870 Sqfeet |
| 8 | Digital Electronics Lab | 2 | Digital Trainer Kit, DSO , Function Generator, Power Supply | 16Hrs | Er. Jitendra Kr. Shukla | S. R. Maurya Sarita Gupta | Instructor Lab Attendant | Diploma VIII Pass | 990 Sqfeet |
| 9A | Microwave Lab | 6 | Microwave X Band & C Band Test Bench, DSO, Network Analyzer | 4Hrs | Er. Vinay Kumar | S. R. Maurya Sarita Gupta | Instructor Lab Attendant | Diploma VIII Pass | 390 Sqfeet |
| 9B | Antenna Design Lab | 6 | Motorized Antenna Test Setup Bench | 4Hrs | Er. Vinay Kumar | S. R. Maurya Sarita Gupta | Instructor Lab Attendant | Diploma VIII Pass | 390 Sqfeet |
| 10 A | Digital Signal Processing (DSP) Lab | 3 | DSP Processor 6713/6748 Exp. Kits,<br>10 Set of Computers, Printer | 16Hrs | Er. Gayatri Tiwari | Tejveer Singh Jai Krishan | Instructor Lab Attendant | Diploma ITI | 390 Sqfeet |
| 10B | Advance Communication Lab | 6 | Optical Test Bench, Fiber Optics Components , Fiber Optics Exp. Kits,<br>Wireless/CDMA/ Mobile Trainer Kit,<br>DSO and Function Generator | 4Hrs | Er. Anurag Yadav | Tejveer Singh Jai Krishan | Instructor Lab Attendant | Diploma ITI | 390 Sqfeet |
| 11 | VLSI Lab | 3 | 10Set of Computers FPGA/CPLD/ SPARTAN Exp. Kits, Microwind software,Sytem Crafter software, Xilinx software, Cadence Software | 6Hrs | Er. Anum Khan | P. K. Bhattacha Jai Krishan | Lab Assistant Lab Attendant | B.Com ITI | 510 Sqfeet |
| 12 | Analog Signal Processing (ASP) Lab | 6 | 5 Set of Computers, ASLK Pro Exp. Kits DSO, Function Generator, Multimeter | 12Hrs | Er. Anum Khan | S. R. Maurya Sarita Gupta | Instructor Lab Attendant | Diploma VIII Pass | 510 Sqfeet |

Table 6.1

## FACILITIES AND TECHNICAL SUPPORT

**6.1.1** Rooms for lectures (Core/Electives), Seminars, Tutorials, etc., for the programme

- There are 12 exclusive faculty rooms for each faculty and 1 faculty meeting rooms.All faculty rooms have sufficient natural light, good ventilation, with tubes, AC and fan arrangement.
- Rooms are equipped with White board, Computer with Internet connection along with Rack and Almira.
- 4 Classrooms and 2 Tutorial rooms are for taking lectures
- The Department has been allotted one Seminar Rooms for Counseling/discussion with the students.
- Smart room is equipped with TV smart board and speakers.
- Properly equipped with Seats, White board, podium with LCD Projectors.
- All rooms for the programme are equipped with internet connection.

| **Room Description** | **Lecture/Lab/Faculty Room Details** | Class Type | Shared /Exclusive | **Intake** | **Area** | **Roon Equipped with** |
|---|---|---|---|---|---|---|
| EC103A | Lecture Hall/ Tutorial Room | Tutorial Room | Shared | **40** | 360 Sqfeet | Benches, Black board, Light, Fan |
| EC103B | Lecture Hall/ Tutorial Room | Tutorial Room | Shared | **40** | 360 Sqfeet | Benches, Black board, Light, Fan |
| EC104 | Microprocessor Lab | LAB | Shared | **40** | 510 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC105 | Lecture Hall (Class Room) | Class Room | Exclusive | **90** | 960 Sqfeet | Benches, Black board, Light, Fan |
| EC107 | Microcontroller & Embedded Lab Project Lab | LAB | Exclusive | **40** | 960 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC108 | Workshop & PCB Design | LAB | Exclusive | **40** | 875 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC109 | Electronics Engineering | LAB | Exclusive | **40** | 990 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC110 | Computer Aided Design (CAD) Lab | LAB | Exclusive | **40** | 990 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC201 | Digital Signal Processing (DSP) Lab | LAB | Exclusive | **40** | 390 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC201 | Advance Communication Lab | LAB | Exclusive | **40** | 390 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC202 | Microwave Lab<br>Antenna Design Lab | LAB | Exclusive | **40** | 790 Sqfeet | Black board, Light, Fan, PC, Table, Chair, Almeria Rake |
| EC204 | Student Activity Room | Room | Shared | **-** | 180 Sqfeet | PC, Table, Chair, Almeria Rake PC Photocopy Machine |
| EC209 | Lecture Hall (Class Room) | Class Room | Exclusive | **90** | 960 Sqfeet | LCD Projector Podium Benches, Black board, Light, Fan |
| EC210 | Lecture Hall (Class Room) | Class Room | Shared | **90** | 960 Sqfeet | LCD Projector Podium Benches, Black board, Light, Fan |
| EC211 | Analog Electronics Lab | LAB | Exclusive | **40** | 960 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC212 | Communication Lab | LAB | Exclusive | **40** | 870 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC213 | Digital Electronics Lab | LAB | Exclusive | **40** | 960 Sqfeet | White & Black board, PC with WiFi 30 Table, Chair, Almeria Rack, Light, Fan |
| EC214 | Faculty Room | Faculty Room | Shared | **1** | 180 Sqfeet | PC, Table, Chair, Almeria, Rake |
| EC215 | Faculty Room | Faculty Room | Exclusive | **1** | 180 Sqfeet | PC, Table, Chair, Almeria, Rake |
| EC216 | Faculty Room | Faculty Room | Exclusive | **1** | 180 Sqfeet | PC, Table, Chair, Almeria, Rake |
| EC217 | Faculty Room | Faculty Room | Exclusive | **1** | 180 Sqfeet | PC, Table, Chair, Almeria, Rake |

# FACILITIES AND TECHNICAL SUPPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| EC218 | Faculty Room | Faculty Room | Exclusive | **1** | 180 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC301 | Record Room | Office | Exclusive | | 960 Sqfeet | Racks, Almeria |
| EC302 | Faculty Room ( Professor) | Faculty Room | Exclusive | **1** | 610 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC303 | Office | Room | Exclusive | | 180 Sqfeet | Table, Chair, Almeria PC Photocopy Machine |
| EC304 | Faculty Room (Professor) | Faculty Room | Exclusive | **1** | 610 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC305 | Faculty Room (Associate Professor | Faculty Room | Exclusive | **1** | 360 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC306 | Faculty Room (Associate Professor) | Faculty Room | Exclusive | **1** | 360 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC307 | Faculty Room | Lab /Faculty Room | Shared | **2** | 510 Sqfeet | PC, Table, Chair, Almeria, Rake White Board |
| EC308 | Departmental Library Faculty Meeting Room | Lab/Faculty Room | Shared | **2** | 510 Sqfeet | Books PC, Table, Chair, Almeria, Rake ,PC Photocopy Machine White Board |
| EC309 | Lecture Hall (Class Room) | Class Room | Exclusive | **90** | 990 Sqfeet | LCD Projector Benches, White & Black board, Light, Fan TV Fan Intractive Board |
| EC310 | Smart Class Room | Class Room | Exclusive | **90** | 990 Sqfeet | LCD Projector Benches, White & Black board, Light, Fan |
| EC311 | Seminar Hall | Class Room | Shared | **90** | 990 Sqfeet | LCD Projector Cusion Chairs, White & Black board, Light, Fan Intractive Board |
| EC312 | Analog Signal Processing Research Lab | LAB | Exclusive | **5** | 310 Sqfeet | LCD Projector Benches, Black board, Light, Fan |
| EC313 | Analog Signal Processing Lab | LAB | Shared | **15** | 510 Sqfeet | LCD Projector Benches, Black board, Light, Fan |
| EC314 | Faculty Room | Faculty Room | Exclusive | **1** | 360 Sqfeet | PC, Table, Chair, Almeria, Rake, Printer |
| EC315 | Faculty Room | Faculty Room | Exclusive | **1** | 360 Sqfeet | PC, Table, Chair, Almeria, Rake Printer |
| EC316 | VLSI Design Lab | LAB | Shared | **15** | 510 Sqfeet | PC, Table, Chair, Almeria, Rake |
| EC317 | Conference Room | Room | Exclusive | **30** | 510 Sqfeet | LCD Projector Table, Cusion Chair, Notice Board |

Table 6.1.1

## FACILITIES AND TECHNICAL SUPPORT

**Technical Lab Faculty details**

- Department has sufficient number of qualified technical supporting faculty and staff for program specific laboratories.
- Technical teaching faculties for preparation and arrangement of practical setup.
- Technical staff looks after the minor maintenance of department equipment.

# Technical Lab Staff details

| Name of Technical Staff | Designation | Pay-scale | Exclusive/ Shared Work | Date of Joining | Qualification | |
|---|---|---|---|---|---|---|
| | | | | | At Joining | Now |
| S. R. Maurya | Instructor | 9300-34800 Gpay5400 | Exclusive | 20-06-1987 | Diploma | Diploma |
| Tejveer Singh | Instructor | 9300-34800 Gpay 4200 | Exclusive | 04-12-2007 | Diploma | Diploma |
| Kunwar Singh | Lab Assistant | 9300-34800 Gpay 4200 | Exclusive | 01-11-1995 | Intermediate PCM | Graduate |
| P. K. Bhattachary | Lab Assistant | 9300-34800 Gpay 4200 | Exclusive | 31-10-1995 | B.Com. Inter Science | B.Com. Inter Science |
| Ram Gopal | Lab Attendant | 5200-20200 Gpay 2800 | Exclusive | 14-06-1991 | Intermediate | Intermediate |
| Jai Krishan | Lab Attendant | 5200-20200 Gpay 2400 | Exclusive | 18.08.1994 | High School & ITI | High School & ITI |
| Sarita Gupta | Peon | 5200-20200 Gpay 1900 | Exclusive | 08-02-2011 | VIII Pass | VIII Pass |

# Teacher Fellow cum Lab Faculty details

| Name of Technical Staff | Designation | Pay-scale | Exclusive/ Shared Work | Date of Joining | Qualification | |
|---|---|---|---|---|---|---|
| | | | | | At Joining | Now |
| Er. Anum Khan | Teacher fellow | 40000=00 | Exclusive | Oct. 2017 | M.Tech | Persuing PhD |
| Er, Gayatri | Teacher fellow | 40000=00 | Exclusive | Oct. 2017 | M.Tech | Persuing PhD |
| Er. Vinay Kumar | Teacher fellow | 40000=00 | Exclusive | Oct 2018 | M.Tech | Persuing PhD |
| Er. Jitendra Kr. Shukla | Teacher fellow | 40000=00 | Exclusive | March 2019 | M.Tech | Persuing PhD |
| Er. Sonmati Verma | Teacher fellow | 40000=00 | Exclusive | March 2019 | M.Tech | Persuing PhD |

## FACILITIES AND TECHNICAL SUPPORT

### 6.2 Laboratories: Maintenance and overall ambiance (10)

**Maintenance:**

1. Do's and Don'ts and Safety measures rules are displayed in each laboratory.
2. Well trained technical staffs are available for maintenance of laboratory equipments.
3. Department having four 2 10KVA UPS and 2 5KVA, along with batteries is used in case of power failure in laboratories.
4. At the end of every semester, the regular scan of equipment is carried out.
5. As per the requirement minor repairs are carried out by the lab assistant & faculty member.
6. Maintenance of computers is taken care by the faculty Incharge of the department.
7. Major repairs are outsourced by following the procedure of the institute
8. Department hasLAN and Wi-Fi internet whichis maintained for students and Faculty usage.
9. All necessary PC system regular software like Microsoft office, browser, lab software, antivirus software etc, is installed and maintained.

**Ambiance:**

1. Department has fully furnished laboratories with well-equipped equipment which shall cater to all UG courses as per curriculum requirements.
2. Chairs and benches are in good condition. Chair with desk are provided for individual student in laboratories.
3. All the rooms are built as per norms with sufficient furniture and other resources.
4. All rooms have sufficient natural light, good ventilation, with tubes, and fan arrangement.
5. Department has experienced faculty to educate them in all the fields of engineering.
6. All the labs are conducted and evaluated every week.
7. Labs are equipped with sufficient hardware and licensed software to run program specific curriculum and off program curriculum.
8. In laboratory, experiment manuals are distributed to students.
9. Sufficient number of windows is available for ventilation and every lab has two exit points.
10. Lighting system is very effective, along with the natural light in every corner of the rooms.
11. Each Lab is equipped with white black board, computer, Internet, and such other amenities
12. Exclusively, a project lab has been provided for the students to carry out their mini and major project work.

## FACILITIES AND TECHNICAL SUPPORT

6.2.1 Additional facilities created for improving the quality of learning experience in Laboratories

- Adequate numbers of computers are available in laboratories.
- Printing facility is provided in each lab.
- Internet connection is available in each lab.
- All the labs have full time lab staff appointed to support the students within and beyond working hours.
- Also the laboratories and departmental library are made available beyond working hours on students' demand

| Sr. No. | Facility Name | Details | Reason(s) for creating facility | Utilization |
|---|---|---|---|---|
| **1.** | Seminar Hall | Fully equipped shared seminar hall with Computer, LCD projector, 90 Student Desk, White Board, Fan, Microphone, Speaker, | To present technical talk/project seminars/research papers/workshops / industry interaction presentation.<br><br>Overall development of students like cultural, sports activities etc.<br>In fact, smart classes are almost like watching videos as sometimes, animated visuals are. | Per Semester 12hrs |
| **2.** | SMART CLASS ROOM | Fully equipped with Computer, LCD projector, 90 Student Desk, White Board, Fan, Microphone, Speaker, | To present technical talk/project seminars/research papers/workshops / industry interaction presentation.<br><br>Overall development of students like cultural, sports activities etc.<br>In fact, smart classes are almost like watching videos as sometimes, animated visuals are. | Per Semester 10hrs |
| **2** | Lab Manuals along with instruction classes for all the labs | Manuals are provided for Analog electronics, Digital Electronics, HDL, Microcontroller, Microprocessor, Advanced communication | To create an awareness about the experiment and to educate the need of conducting the same.<br>Students can understand concept of the experiment better.<br>To document the same thing using relevant data. | Throughout the semester |
| **3** | Departmental Library | Having collection of textbooks, Reference, Books and Project/Seminar report. | To meet the needs of students<br>To provide reference facilities<br>To refer advanced information for seminar, laboratory projects | Throughout the semester |

Table 6.2.1

## 6.3. Safety Measures in Laboratories (10)

- Specific Safety Rules like Do's and Don'ts are displayed and instructed for all students.
- First-aid box is kept in each laboratory.
- Fire extinguishers are kept in each outside the laboratory.
- Well trained technical supporting staff monitors the labs.
- Damaged equipment are identified and serviced at the earliest.
- A clean and organized Laboratries are maintained.
- Appropriate storage areas are available.

| Safety measures Do,s and Don,ts |
|---|
| • If any problem arises with experimental kit report it to the lab staff.<br>• For any debugging, virus problems consult the Lab In-charge for help.<br>• Records and observations are signed by the concerned staff on the same day.<br>• Don't insert Pen drives without prior permission.<br>• Don't forget to turn off your system properly |

Table 6.3

## 6.4. Project laboratory (10)

UG students and faculty members utilize Project laboratory for their mini projects, projects, and research activities.Computing facility with sufficient number of computers with high speed internet connectivity are available for students use. All the computing facility of the department is connected to the Institute Mbps Network on optical fibre.

A suitable environment for carrying out project related activity of final year engineering students has been created in VLSI lab.The lab is aided by state of thear technological aids.Various hardware and software platform for FPGA, micro-controller, CPLD, etc. to carry out R&D work is available in the said lab.The lab has sufficient number of PCs for the students to carry out their project activities.The entire lab is having internet connectivity to enhance the learning activity.

In addition, others laboratories like Advance Communication & DSP laboratory, Microwave & Antenna Design Laboratory, Digital Electronics, Microcontroller & Microprocessor Laboratory, IoT and Analog Signal Processing Lab are also used for project work as per requirement and suitability

The computer consists of Intel i7, i5, Pentium core 2 duo processors. Licensed software such as Matlab, Cadence, Mentor Graphic Xilinx etc are provided. Development environments like MS Visual Studio, MS Visual Studio .NET, Visual Prolog, MS Office developer, etc are available.UPS power is made available to the Lab and office.

| Sr. No. | Facility Name | Details | Reason(s) for creating facility | Utilization | Areas in which students are expected to have enhanced learning |
|---|---|---|---|---|---|
| 1 | Research and Development lab and Project lab | Mini and Major project models-guided by our faculty members in various fields of engg. Open source software's like Lab View, Pspice, Keil micro vision, Xilinx9.1i, Microwind | Real time application. To create innovative ideas. To build the creative skills. Motivate students to come up with projects/products. | Throughout the semester | Prototype models are developed. Automotive electronics, Home automation, Safety electronics models are developed. Publishing Quality Technical papers. |
| 2 | Video's from NPTEL Class, | Displayed in the Seminar Hall | Understanding thevideo oriented teachingand learning. | Throughout semester 15 hrs | Better understanding the subjects. In depth knowledge beyond Lab. |

Table 6.4a

## FACILITIES AND TECHNICAL SUPPORT

Major Facilities and Utilization

| Sr. No. | Name of the Facilities | Utilization |
|---|---|---|
| 1. | Matlab software and DSP kits in DSP lab– single user | UG students and Faculty members utilize for their miniprojects, projects, and research activities. |
| 2. | VLSI- **Cadence**,Microwind, System Crafter and Xilinx licensed software in VLSI Lab–25 user | UG students, Research Scholars and Faculty members utilize for their miniprojects, projects, and research activities |
| 3. | Keil micro vision 3 free version software tool and Microcontroller 8051, MSP 430 kit in Microprocessor & MicrocontrollerLab | UG students and Faculty members utilize for their mini projects, projects, and research activities |
| 4. | Antenna test bench and microwave components in (X & C Band) communication system Lab | UG students and Faculty members utilize for their miniprojects, projects, and research activities |
| 5. | Xilinx licensed version software for designing and verifying codes of digital logic in VLSI Lab | UG students and Faculty members utilize for their miniprojects, projects, and research activities |
| 6. | Orcad P-Spice free version software for implementation of power circuits in the CAD Lab | UG/PGstudents, Research Scholars and Faculty members utilize for their miniprojects, projects, and research activities |
| 7. | ASLK PRO Kit (30 Units) with Agilent CRO for integrated circuits. | UG students and Faculty members utilize for their miniprojects, projects, and research activities |
| 8. | Seminar hall (Smart Class Room) which includes projector, PC system, software, audio systems. | UG students and Faculty members utilize for their miniprojects, projects, and research activities presentation. |
| 9. | Research Lab | UG students and Faculty members utilize the R&D Lab for their projects and research activities |
| 10. | Internet of 100Mbps and Wi-Fi of 35Mbps | UG students, Research Scholars and Faculty members utilize the internet and Wi-Fi facility for their Project and research activities, |
| 11. | 10KVA UPS 240V DC along with batteries | Used in case of power failure in all PC System power failure |

Table 6.4b

## New Laboratories

*4 New laboratories with state of the art facilities were incorporated in Electronics and Communication Engineering department under TEQIP.*

| Sr No | Laboratory Name | Facilities |
|---|---|---|
| 1. | Digital Signal Processing Laboratory | All-in -One Educational Practice Board for DSP lab<br>• Model - EPB_C6748<br>• Model - EPB_C6713 |
| 2. | Analog Signal Processing Laboratory | Hardware component implementation and analysis with Agilent Analog Electronic Lab Solution with Trainer Kit including Oscilloscope, Power supply, Multimeter, GPIB & Kit |
| 3. | VLSI Design Laboratory | TEQIP II<br>• Software Xilinx ISE System Edition 16.4<br>• Microwind 3.5 package<br>• System Crafter SC Version<br>• Advance VLSI Proto Board<br>• Xilinx Spartan ® 6FPGA<br>• Xilinx Virtex ® Board with aerial Ethernet cable of 5 V Power supply<br>• CPLD(Xilinx Xc 95108PC84) Development Board<br>TEQIP III<br>• Cadence Virtuoso 6.1.7 (10 user) |

### 6.4.1 List of Item Purchase in last Year 2016-2015

List of Item Purchase in 2016

| S.No. | Date of Purchase | Item | Quantity | Total Price(Rs) |
|---|---|---|---|---|
| 1. | 04.12.2015 | Microwind 3.5 package & System Crafter SC Version | 02 (one each) VLSI Lab | 6,30,000.00 |
| 2. | 04.12.2015 | DSK - 6713 Kit Interfacing License Version Code Compressive Studio(VS) Real Line Image Processing<br>1. DSK 6713 -01<br>2. ASK 23-01<br>3. ASK 01-01<br>4. ASK 08 -01<br>5. ASK 19 -01<br>6. ASK 18 -01<br>7. GSM Modem 01<br>8. ASK 13 FRID Kit -01<br>9. DSP Tuter Set -01<br>10. 9 V Power Supply -01<br>11. EPB 67H8 -01<br>12. USB JJAG Emulator -01<br>13. 5 V Power Supply -01<br>14. 12 V Power Supply -01<br>15. USB A to B Cable -01<br>16. USB A to Meaning AC Cable -01<br>17. Crocodile Cable -02<br>18. Audio Cable -02<br>19. Video Cable -01<br>20. BNC to RC Connector -01<br>21. Work Book 6713 -01<br>22. Work Book 6718 -01<br>23. Camera Lens -01<br>24. Ether Net Cable -01<br>25.14 Pin FRC Cable -01<br>26. 20 Pin FRC Cable -03<br>27. Serial Cable -01<br>28. DVD -02<br>29. CCS -01 | 01 Set DSP & Project Lab | 5,06,179.00 |
| 3. | 11.04.2016 | Advance VLSI Proto Board | 02 VLSI Lab | 1,30,200.00 |
| 4. | 11.04.2016 | Xilinx Spartan ® 6FPGA | 02 VLSI Lab | 45,150.00 |
| 5. | 11.04.2016 | Xilinx Virtex ® Board with aerial Ethernet cable of 5 V Power supply | 01 VLSI & Project Lab | 71,190.00 |
| 6. | 11.04.2016 | Software Xilinx ISE System Edition latest 16.4 | 01(25Users) | 2,36,250.00 |
| 7. | 11.04.2016 | Logic Analyzer | 01 ASP Lab | 1,13,925.00 |
| 8. | 11.04.2016 | CPLD(Xilinx Xc 95108PC84) Development Board | 01 VLSI Lab | 45,675.00 |
| 9. | 11.04.2016 | Embedded Programmable Project Board (TR51) | 06 Embedded | 37,800.00 |
| 10. | 11.04.2016 | ARM9 Based Embedded Board | 01 Embedded | 78,750.00 |
| 11. | 20.04.2016 | Multi Purpose Electronic Lab Solution with Trainer Kit. including Oscilloscope, Power supply, Multimeter, GPIB & Kit | 03set ASP & Project Lab | 9,30,825.00 |
| 12. | 20.04.2016 | General Purpose Electronic Lab. including Oscilloscope, Power supply, Multimeter & Kit | 01set ASP & Project Lab | 1,83,750.00 |
| 13. | 20.04.2016 | Analog Electronic Lab Solution with Trainer Kit. including Oscilloscope, Power supply, Multimeter, GPIB & Kit | 01set ASP & Project Lab | 3,20,250.00 |

Table 6.4.1

| CRITERION 7 | CONTINUOUS IMPROVEMENT | 75 |
|---|---|---|

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

## POs & PSOs Attainment Levels and Actions for improvement – CAY 2018-19 only

| POs | Target Level | Attainment Level | Observation |
|---|---|---|---|
| PO1: Engineering Knowledge- Apply the knowledge of mathematics, science, engineering fundamental and engineering specialization to the solution of complex engineering problems. | | | |
| PO1 | 2.62 | 1.99 | Program curriculum requires the strong foundation of theoretical and practical knowledge of science and mathematics, which the students study in their first year, but students lack in correlating the theoretical concepts with applications.<br>Attainment level is low in the following subjectssuch as, Network Analysis & Synthesis, Electronic Devices and Ciruits, Optical Networks, Wireless& Mobile Communication, Electronic Switching etc. Students find itdifficult to solve problems in Fundamental of Devices and complex problems in Networks.Synthesis of Network, Complex circuit designing & wireless networking is not getting properly by the students. |
| ACTION1: Tutorials based on real application inclusion of simulation software in teaching learning process.<br>ACTION2: We inspire students to participate in technical events, other events where their basic knowledge should convert to application matching with defined level of their standards. | | | |
| PO2: Problem Analysis: Identify, Formulate, review research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. | | | |
| PO2 | 2.13 | 1.58 | The problem solving and analyzing skills gained through first and second year courses helps the students to apply in real time application.<br>Attainment level is low in the following subjects such as, Network, Mathmatics III, Satellite Communications, and Electronics Switching. Attainment level is still 74% which requiring improvement. Students find it difficult to solve complex problem of Mathmatics. Basic knowledge of Electronics Switching Circuit not well understood. |
| ACTION1: Students are encouraged to observe their homes and surroundings to gain insight into real life engineering problems and think of possible approaches/solutions to these problems.<br>ACTION 2: Gained knowledge on complex engineering problems and solution on visiting industries | | | |
| PO3: Design/development of Solutions: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for public health, safety, cultural societal and environmental considerations. | | | |
| PO3 | 1.92 | 1.42 | Some of the projects developed by the student as hobby projects /major projects (final year) are not fully considering the social and environmental |

| | | | |
|---|---|---|---|
| | | | issues.<br>Attainment is low in the following subjects such as, Digital Logic Design, Electronics Mearsurement, Mathmatics III, Analog Signal Processing, DSP and Data Structure Lab.Attainment level is still 74% which requiring improvement. Students find it difficult to understand the concept of Data structure. Basic knowledge of Analog Signal Processing Circuit is not well understood. |
| ACTION1: Students are motivated to include all standard parameters and constraints according to National and International safety norms and to address environmental concerns. | | | |
| PO4: Conduct Investigations of Complex Problems: Use research–based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions. | | | |
| PO4 | 1.65 | 1.19 | It is observed that most of the project abstract and literature survey are addressing the research based approach but does not end with valid conclusions.<br>Attainment is low in the following subjects such as, Digital Signal Processing, VLSI Design, Electronics Switching and Electronics Device lab. Attainment level is still 72% which requiring improvement. Students find it difficult to understand all the concepts in the digital signal processing.Students find it difficult to understand and design the complex circuit in the lab.Students find it difficult to develop the conepts about day to day changes made in the nano technology in VLSI design. |
| ACTION1: Academic workshops are coming into picture to apply more knowledge in terms of conduction of experiments and analysis of results at required level. | | | |
| PO5: Modern Tool Usage: Select and apply appropriate techniques, resources and modern engineering tools including prediction and modeling to complex engineering activities with an understanding of the limitations | | | |
| PO5 | 2.07 | 1.62 | It is observed that Up-gradations of tools and resources are necessary to meet the industry standards and research<br>Attainment is low in the following subjects such as, Antenna Design Digital Signal Processing, Data comminication Network, Wireless & Mobile Communication, Optical Network, Minor Project,Micowave and optical lab, and Integrated circuit lab. Attainment level is still 78% which requiring improvement.Students find it difficult to understand the comlex problems in digital signal processing.Students are not showing much interest in the minor project.Students are not completely familiar with the modern programming tools used in the lab. |
| ACTION1: Modern labs are developed to demonstrate the use of Modern tools like MATLAB, Arduino, LabView, Cadence etc. to specify fulfillment of requirement in engineering applications in new industrial era. | | | |
| PO6: The Engineer and Society: Apply Reasoning informed by the contextual knowledge to assess societal, health, | | | |

<table>
<tr><td colspan="4">safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice</td></tr>
<tr><td>PO6</td><td>1.31</td><td>1.0</td><td>The courses of Electronics and Communication Engineering are addressing the needs of, health, safety and social concerns regarding engineering practices in real life.<br>Attainment is low in the subjects RVE 401, HU 501 and HU601.</td></tr>
<tr><td colspan="4">ACTION1: To understand the safety concerns and social aspects, students visited industry to expand their practical knowledge with the effect of improved practices in engineering.</td></tr>
<tr><td colspan="4">PO7: Environment and Sustainability: Understand the impact of the professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development.</td></tr>
<tr><td>PO7</td><td>2.00</td><td>1.15</td><td>The issues of global and environmental awareness among the student should be improved.<br>Attainment is low in the subjects as RAS302 and RVE401.</td></tr>
<tr><td colspan="4">ACTION1: Students are encouraged to indulge in projects, in which global and environmental issues are improved, with respect to consumption of energy and utilization of renewable energy resources.</td></tr>
<tr><td colspan="4">PO8: Ethics: Apply Ethical Principles and commit to professional ethics and responsibilities and norms of the engineering practice.</td></tr>
<tr><td>PO8</td><td>2.20</td><td>1.66</td><td>The issues of Ethical Principles and commit to professional ethics and responsibilities awareness among the student should be improved.<br>Attainment is low in the subjects as RVE401.</td></tr>
<tr><td colspan="4">ACTION1: Career readiness program, corporate lectures and motivational talks are arranged to overcome the above observations.</td></tr>
<tr><td colspan="4">PO9: Individual and Team Work: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary Settings</td></tr>
<tr><td>PO9</td><td>0.97</td><td>0.6</td><td>The students are doing better in improving the overall expertise in field of engineering but due to lack of communications and other ethical moral knowledge, some are lagging in real life situations.<br>Attainment is low in the following subjectssuch asMicrocontroller and Microprocessor, Data Structure, Microprocessor Lab and VLSI Design. Attainment level is still 61.30% which requiring improvement. Students find it difficult to understand the concept of data structure. Students findalso difficult to solve the complex assembly language programming in the microprocessor and in the lab.Students find it difficult to understand the CMOS complex circuit.</td></tr>
<tr><td colspan="4">ACTION1 The students are able to work as individual as wellas in team.</td></tr>
<tr><td colspan="4">PO10: Communication: Communicate effectively on complex engineering activities with the engineering community and with society at large such as able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.</td></tr>
<tr><td>PO10</td><td>0.71</td><td>0.37</td><td>The communication, presentation and report writing skills are to be further improved among the students.</td></tr>
</table>

| | | | |
|---|---|---|---|
| | | | Attainment is low in the following subjects such as Microwave circuit, DSP, Data Communication Network and Satellite Communication. Attainment level is still 52% which requiring improvement. Students find it difficult to understand the day by day changes in the satellite communications.All the concept of data communication and networks is not well understood to students. |
| ACTION1: Soft skills training is imparted to students to enhance various aspects of ommunication/ technical talks by group discussions, presentations and new learning outcomes. | | | |
| PO11: Project Management and Finance: Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and as a leader in a team, to manage projects and in multi-disciplinary environments. | | | |
| PO11 | 0.77 | 0.44 | Few courses of curriculum give knowledge of Management principle and applying managerial principles to his/her work including financial implications and to manage the project in multidisciplinary environments. Attainment is low in the subject as HU501 and HU601. |
| ACTION1: The awareness is created among the student regarding the management principles and managing projects | | | |
| PO12: Life-long Learning: Recognize the need for and have the preparation and ability to engage in independent and life-long learning the broadest context of technological change. | | | |
| PO12 | 1.12 | 0.74 | The prefinal year and final year courses of the program are demonstrating there source for contemporary issues and life long learning. Attainment is low in the subjects such as ROE 038, REC303, EC701, EC031 and EC801. Attainment level is still 66.30% which requiring improvement.Students find it difficult to understand the concepts in the transformation theory.Concept of optical sources and fibers are not clear to the students.Students find it difficult to understand and solve the complex circuit problems. |
| ACTION1: Using ICT facilities, such as PPTs, live demonstration of topic imparted using video lecture.<br>ACTION2: Lecture content includes new technological developmental tools and knowledge of new Products. | | | |
| | | | |

Table.7.1

| PSOs | Target Level | Attainment Level | Observation |
|---|---|---|---|
| PSO 1 : An ability to understand the concepts of basic Electronics & Communication Engineering and to apply them to various areas like Signal processing, VLSI Design, Embedded Systems, Communication Systems and Devices etc | | | |
| PSO1 | 2.5 | 1.77 | The courses of the program are demonstrating there source fullness for contemporary issues. The project titles of the final year and pre- final year students are addressing there all life problems.<br>Attainment is low in Network Analysis & Synthesis, Mathematics III, Data Structure & Algorithms Lab, Antenna & Wave Propagation, Digital Communication, Integrated Circuit Technology, Analog Signal Processing, Satellite Communication and VLSI Design. |
| ACTION1: Students are motivated to takeup the real life problems during their project work so that theycan design, analyzeand find solution which gives exposureto latest technologies. | | | |
| PSO2: Problem-solving skills: An ability to solve complex Electronics and Communication Engineering problems, using latest hardware and software tools, along with analytical skills to arrive cost effective and appropriate solutions. | | | |

| | | | |
|---|---|---|---|
| PSO2 | 2.13 | 1.83 | Attainment is low in Microprocessors Lab, Data Communication Network, VLSI Design, Optical Networks and Electronic Switching. |
| ACTION1: Academic workshops and conferences are cominginto picture to apply more knowledge in terms of conduction of experiments and analys is the as required level. | | | |

| | | | |
|---|---|---|---|
| PSO3: Successful Careerand Entrepreneurship: Wisdom of social and environmental awareness along with ethical responsibility to have a successful career and to sustain passion and zeal for real-world applications using optimal resources as an Entrepreneur. | | | |
| PSO3 | 1.35 | 1.12 | To inculcate ethics, good interpersonal relationships, ability to communicate, leadership and project management.<br>Attainment is low in Signals & System, Microprocessors Lab, Data Communication and Networks, VLSI Design, Minor Project and Optical Networks. |
| ACTION1: Career readiness program and corporate lectures are arranged to meet required expertise in field of engineering. | | | |

## 7.2. Academic Audit and actions taken there of during the period of Assessment (15)

### Objectives of Academic Audit

Academic Audit is a faculty-driven model of ongoing self-reflection, collaboration, team work and peer feedback. It is based on structured conversations among faculty and peer reviewers-all focused on a common goal to improve quality processes in teaching and learning, to enhance student success.

### Focus Areas

- Defining intended Course and Program Outcomes
- Identifying curricular gaps and strategy to bridge the gaps
- Designing effective teaching and learning processes
- Developing outcome-based student assessment process.
- Ensuring implementation of quality education - significant activities such as research and services, co- curricular and extracurricular activities to support program outcomes.

Institute has constituted various committees to conduct and review activities at both the institute and department level.

### A. Central Program Assessment and Quality Improvement Committee (CPAQIC)

This is a central level committee as follows:

| | | |
|---|---|---|
| 1. | Director | Chairman |
| 2. | Controller of Examination | Member |
| 3. | All Head of the Departments | Member |
| 4. | Two faculty members nominated by Director | Member |
| 5. | Training and Placement Officer | Member |
| 6. | Dean Academics | Member Secretary |

### Main Functions

The main objective of the committee is to ascertain that departments have put in place adequate and effective quality assurance mechanismand optimum utilization of available resources, their optimal utilization, additional resource requirements for providing quality education.

**Program Assessment and Quality Improvement Committee (PAQIC)**

This is department level committee as follows:

| | | |
|---|---|---|
| 1. | Head of the Department | Chairman |
| 2. | Four faculty members of the department on the basis of seniority, at least one from each cadre | Member |
| 3. | One external member nominated by the Director | Member |

**B. First Year Academic Assessment and Quality Improvement Committee (FYAAQIC)**

This committee is constituted for first year academics as follows:

| | | |
|---|---|---|
| 1. | Head of the Applied Science Department | Chairman |
| 2. | One faculty member from each stream of Applied Science Department. | Member |
| 3. | One faculty member from each program nominated by the Director. | Member |

**Main Functions of PAQIC and FYAAQIC**

- Review assessment of Course Outcomes prepared by concerned faculty members and their relationship with POs and PSOs.
- Committee collects recommendations and suggestions to come out with implementable actions for continuous improvement in attainment of POs and PEOs.
- Prepare and finalize the PEOs and PSOs, align them with the mission.

**7.2.1Departmental (Program) Internal Academic Audit**

The departments of any institution are the backbone of the institution where trifocal activities i.e. Teaching, Research and Consultancy service are conducted. An academic audit reviews the processes and procedures used by departments to enhance the quality of their Programs in terms of program objectives and ensure attributes as program outcomes achieved against the stipulated targets for which processes and procedures have been put in place.Departmental internal academic audit has been carried out by**Program Assessment and Quality Improvement Committee (PAQIC).**

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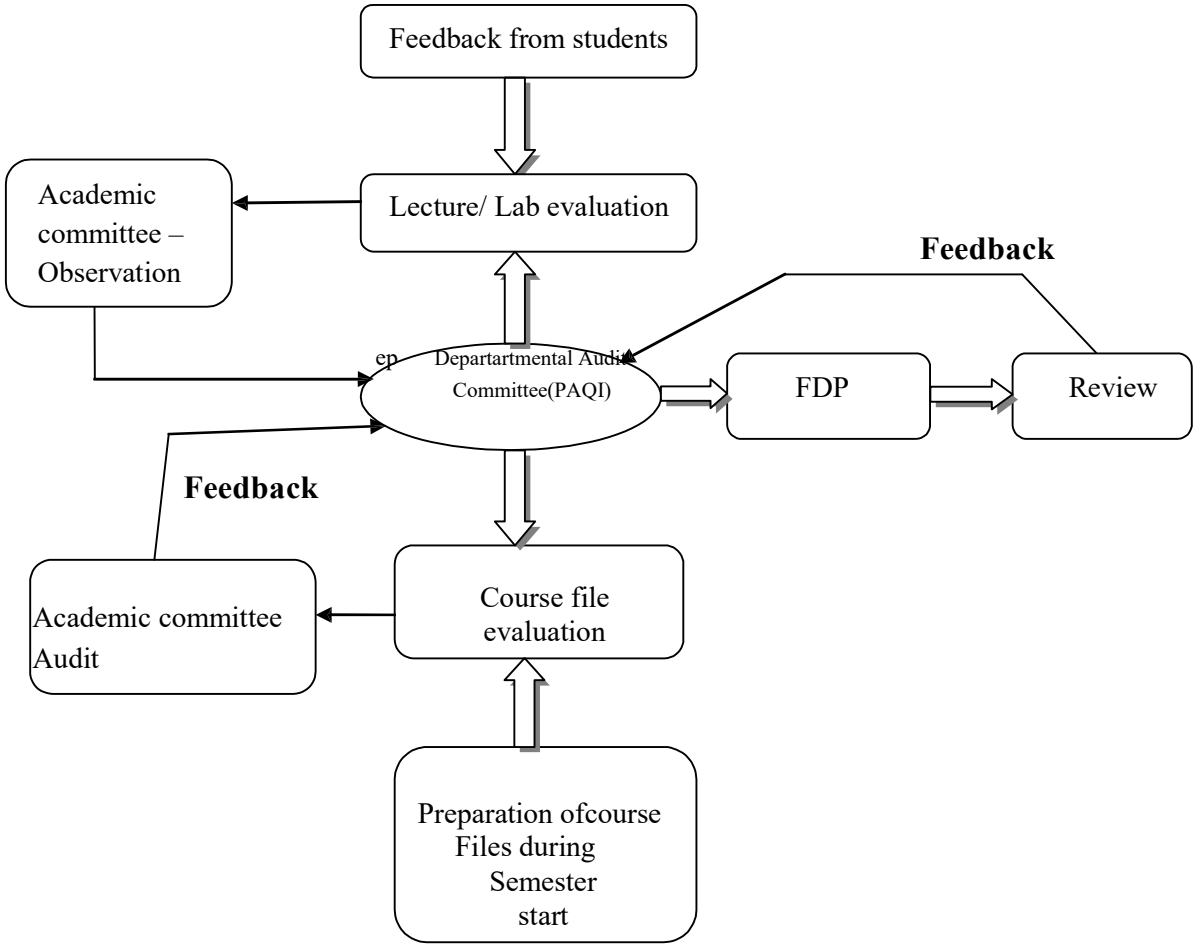
CONTINUOUSIMPROVEMENT

7.2.2 Academic audit and actions take are carried out with the help of different components:




1. Course file Evaluation: Course files are prepared by faculty members before the semester starts. The academic committee consisting of Head of Department, course coordinator and departmental senior faculty members performs audit of course files i.e.verify the contents of the course file, lesson plan, assignments, extra material lecture notes, etc. The comments of the committee are given as feedback to the faculty member to include the recommended material.

2. Lectures/ Lab Evaluation : The academic committee during their random observation of the lectures/lab check delivery of course material as per the lesson plan, teaching aids used, communication skill and classroom management etc. parameters to ensure the teaching methods of benchmarked standards are being used throughout the institute. Corresponding feedback is communicated to the faculty member.

3. Faculty development program (FDP): A faculty member has to undergo faculty development program. The FDP improves the communication skills and improve the methods of teaching-learning are carried out at the institute level.The technical component in the teaching are improvised with the help of faculty members attending workshops, expert lectures etc.either organized at our institute or at other institute.

4. Review: Review of the faculty member is taken at the end of the semester again to compare the levels–what was at the beginning and after the various feedbacks and training received.

**Action taken by the faculty members:**

- Faculty members incorporate changes suggested by the academic committee, if any gaps are found to ensure quality deliverables.
- Faculty members have to match the pace of their deliverables as per the student's requirements as well as they have to schedule the lecture plans in such away that the syllabus is completed on time. To achieve this they can arrange extra lectures and cope-up the syllabus.
- Regular analysis of the results of internal assessment examination of all subjects is done and concerned faculties are guided to take necessary actions.Remedial classes are scheduled in reference to academic progress of the student.
- Faculty members attend FDP as required for the overall development of teaching skills in terms of communication, methods and technical.
- The internal academic auditis carried out at the beginning of the semester as soon as the faculty members are ready with their course files.
- FDP for communication skill development and improving methods of teaching-learning are being carried out regularly by the learning and development department.
- Technical FDP, expert lectures, seminars etc. are being arranged by the individual departments at least once in a semester.

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

**Assessment is based on improvement in:**

- ❖ Placement: number, quality placement, core industry,pay packages etc.
- ❖ Higherstudies: performance in GATE, GRE, GMAT, CATetc., and admissions in premier institutions
- ❖ Entrepreneurs

Based on the evaluation and review of the attainment of POs, modification are done in the program curriculum, aspects such as increase or decrease in the components of theory, practical, project work, communication skills courses and elective courses are considered. In addition, attempt is made to introduce new courses, labs, experiments, exercises for project work, etc on the basis of external interaction with the industry and academic expert at seminars or conferences.Some of the improvements in the Program Curriculum, Placement, Higher Studies and Entrepreneurs activities that have been carried out in the past are listed below:

**Program Curriculum:**

- New experiments are added in the lab courses.
- New elective courses are added from time to time.

**Placement:**

- Soft skill classes of aptitude, reasoning and communication are conducted.
- Lectures of Industry experts are arranged for improvement in placement of the students.
- Mock testsare conducted before Technical/HR interviews, and group discussions for placement.
- Third party evaluation for testing of employability skill has been started.

**Higher Studies:**

- Students are motivated to go for higher studies within India and Abroad.
- Students are encouragedto appear and perform in GATE, GRE, GMAT, CAT etc.
- Institute started preparatoryclasses for higher studies through TEQIP.

**Entrepreneurs:**

- Entrepreneurship Cell (E cell) is organizing workshop on entrepreneurship and interaction with the entrepreneurs.
- Through Entrepreneurship Cell competitions also arranged for new innovative business ideas.

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

Assessment is based on improvement in terms of ranks/score in qualifying state level/national level entrances test,

| Name of the Entrance Examination | No of student | CAY (2018-19) | CAYm1 (2017-18) | CAYm2 (2016-17) |
|---|---|---|---|---|
| National Level Entrance Examination | No. of Students admitted | Nil | Nil | Nil |
| | Opening Score/Rank | Nil | Nil | Nil |
| | Closing Score/Rank | Nil | Nil | Nil |
| State/Institute/Level Entrance Examination /Others (UTTAR PRADESH STATE ENTRANCE EXAMINATION) | No.of Students admitted | 63 | 63+01(PMSS) | 60 |
| | Opening Score/Rank | 786 | 1510 | 107 |
| | Closing Score/Rank | 1388 | 3282 | 4183 |
| UTTAR PRADESH STATE ENTRANCE EXAMINATION for Lateral Entry | No.of Students admitted | 12 | 12 | 12 |
| | Opening Score/Rank | 33 | 02 | 154 |
| | Closing Score/Rank | 153 | 921 | 998 |

**Table 7.4**