# Department of Electronics and Communication Engineering
## Curriculum Structure
## M.Tech. Program in ECE

**1st Semester**

| S. No. | Course Description | Type | L | T | P | Credit |
|---|---|---|---|---|---|---|
| **1** | Modeling and Simulation | PC | 3 | 0 | 0 | 3 |
| **2** | Advanced Wireless Communication | PC | 3 | 0 | 0 | 3 |
| **3** | Microwave Devices and Circuits | PC | 3 | 0 | 0 | 3 |
| **4** | CMOS Logic Circuit Design | PC | 3 | 0 | 0 | 3 |
| **5** | Advanced Wireless Communication Lab | PC | 0 | 0 | 4 | 2 |
| **6** | Microwave Devices and Circuits Lab | PC | 0 | 0 | 4 | 2 |
| **7** | CMOS Logic Circuit Design Lab | PC | 0 | 0 | 4 | 2 |
| **8** | Seminar-I | Semi | 0 | 0 | 4 | 2 |
| | Total Credits | | | | | 20 |

**2nd Semester**

| S. No. | Course Description | Type | L | T | P | Credit |
|---|---|---|---|---|---|---|
| **1** | Research Methodology and IPR | PC | 2 | 0 | 0 | 2 |
| **2** | PE-I | PE | 3 | 0 | 0 | 3 |
| **3** | PE-II | PE | 3 | 0 | 0 | 3 |
| **4** | PE-III | PE | 3 | 0 | 0 | 3 |
| **5** | PE-IV* | PE | 3 | 0 | 0 | 3 |
| **6** | Mini Project/Capstone Project# | Proj | 0 | 0 | 8 | 4 |
| **7** | Seminar-II | Semi | 0 | 0 | 4 | 2 |
| | Total Credits | | | | | 20 |

***** *PE-IV can be offered as a MOOC course.*

***Exit Option** with **Post-Graduate Diploma** by completing a minimum of 40 credits from 1st and 2nd Semesters. Students who exit after the first year shall be awarded the **Post-Graduate Diploma**.*
*# The Capstone Project will only appear on the early exit students' transcript(s).*
*• Completing a minimum of 40 credits in a minimum duration of 1 year.*
*• Completing an additional 2 skill-based courses of 3 credits each or 2 months of internship/project in the summer term following the first year.*
*• Securing a minimum CGPA of 6.5 from these credits.*
*• The student should apply for the PG Diploma to their department, and the department can recommend an additional summer term if the credit and CGPA requirements are not fulfilled.*

**3rd Semester**

| S. No. | Course Description | Type | L | T | P | Credit |
|---|---|---|---|---|---|---|
| **1** | M.Tech. Project (In-house/Industry/Other Organizations *(Academic or Research)*) | Proj | 0 | 0 | 40 | 20 |
| | Total Credits | | | | | 20 |

**4th Semester**

| S. No. | Course Description | Type | L | T | P | Credit |
|---|---|---|---|---|---|---|
| **1** | M.Tech. Project (In-house/Industry/Other Organizations *(Academic or Research)*) | Proj | 0 | 0 | 40 | 20 |
| | Total Credits | | | | | 20 |

*M. Tech. Project credits for the 3rd and 4th Semesters may be replaced with Industrial Project, Industrial SLI, or Project completed at an Academic/Research Organization.*

## Program Elective (PE I, II, and III) Details for the Specialization:

| **Specialization: Wireless Communication and Network Engineering**<br>**Semester: 2nd Semester** | |
|---|---|
| Program Electives<br>**PE I**<br>**PE II**<br>**PE III** | **1.** Applied Signal Processing<br>**2.** Optimization for Engineers<br>**3.** AI and Deep Learning for Wireless Communication<br>**4.** Radio Access Networks<br>**5.** Intelligent Wireless Sensor Networks<br>**6.** Next Generation Wireless Technology<br>**7.** Optical Wireless Communication<br>**8.** Software-Defined Networking |

| **Specialization: RF and Microwave Engineering**<br>**Semester: 2nd Semester** | |
|---|---|
| Program Electives<br>**PE I**<br>**PE II**<br>**PE III** | **1.** Advanced Engineering Electromagnetics<br>**2.** Antenna Theory and Practice<br>**3.** Principles of EMI and EMC<br>**4.** CAD for RF and Microwave Circuits<br>**5.** RF and Microwave Measurements<br>**6.** Microwave Integrated Circuits |

| **Specialization: VLSI and Embedded Systems**<br>**Semester: 2nd Semester** | |
|---|---|
| Program Electives<br>**PE I**<br>**PE II**<br>**PE III** | **1.** Real-Time Systems<br>**2.** Nano-electronic Materials and Devices<br>**3.** Design for Testability<br>**4.** Advanced Embedded Systems<br>**5.** VLSI Technology<br>**6.** Digital System Design using FPGAs<br>**7.** Cyber-Physical Systems<br>**8.** MEMS and Microsystems<br>**9.** System Level Specifications and Design |

## Program Elective (PE IV) Details for the Specialization:

| **Specialization: Wireless Communication and Network Engineering/RF and Microwave Engineering/VLSI and Embedded Systems**<br>**Semester: 2nd Semester** | |
|---|---|
| Program Elective (MOOC Course) | PE IV |

***NOTE:***

***1- Out of 80 credits, if any student completes 50 credits, including his/her thesis work, then he/she will be awarded an M.Tech. Degree with the specialization mentioned in the transcripts. Else, the student will receive an M.Tech. in ECE.***

***2- The List of program electives is a dynamic list, based on available experts in various domains, and is subject to change.***