# B.Tech ECE with Specialization in Embedded System and Industrial IoT

## I & II Semester (Common to all the branches)

### Physics Cycle

- Engineering Mathematics –I
- Physics
- Communicative English
- Problem Solving Through Programming
- Engineering Graphics
- Physics Lab
- Problem Solving Through Programming Lab
- Communicative English Lab

### Chemistry Cycle

- Engineering Mathematics – II
- Chemistry
- Basics of Electrical Engineering
- Workshop Practice
- Sociology and Elements of Indian History for Engineers
- Chemistry Lab
- Electrical Engineering Lab

## III Semester

- Applied Mathematics
- Language - I
- Electronic Circuit Design - I
- Digital System Design using Verilog
- Network Analysis
- General Elective - I
- Electronic Circuit Design – I Lab
- Digital System Design using Verilog Lab
- Mind Management and Human Values (MMHV)-3
- Project Centric Learning
- Diploma Mathematics-I

## IV Semester

- Probability and Statistics Processes
- Language - II
- Microprocessors and Microcontrollers
- Electronic Circuit Design - II
- Signals and Systems
- General Elective - II
- Microprocessors and Microcontrollers Lab
- Electronic Circuit Design – II Lab
- Mind Management and Human Values (MMHV)-4
- Project Centric Learning
- Diploma Mathematics-II

## V Semester

- Electromagnetic Field Theory
- Digital Signal Processing
- Control Systems
- Analog and Digital Communication
- Embedded System Architecture
- General Elective - III
- Digital Signal Processing Lab
- Analog and Digital Communication Lab
- Mind Management and Human Values (MMHV)-5
- Project Centric Learning

## VI Semester

- Economics for Engineers
- Mobile Communication
- Antenna and Wave Propagation
- VLSI Design
- Discipline Specific Elective - I
- General Elective - IV
- Wireless Communication and Antenna Lab
- VLSI Design Lab
- Mind Management and Human Values (MMHV)-6
- Internship/Minor Project

## VII Semester

- Computer Networks
- Millimeter and Optical Wave Communication
- Discipline Specific Elective - II
- Discipline Specific Elective - III
- Constitutional Values
- Computer Networks Lab
- Mind Management and Human Values (MMHV)-4
- Project Dissertation – Phase I

## VIII Semester

- Discipline Specific Elective - IV
- Discipline Specific Elective - V
- Environmental Science
- Project Dissertation– Phase II

## Specialization Courses: Embedded Systems and Industrial IoT (Semester Wise)

| Sl. No. | Semester | Course Name |
|---|---|---|
| 1 | 6 | Sensors and Actuators |
| 2 | 6 | IoT in Automotive Systems |
| 3 | 7 | Embedded C Programming |
| 4 | 7 | IoT Edge Nodes and its Applications |
| 5 | 7 | Mini Project: Application Development Using Arduino and Raspberry Pi boards |
| 6 | 8 | IoT and Data Science |
| 7 | 8 | Introduction to Industrial IoT |
| 8 | 8 | Mini Project on Industrial IoT |

## List of Department Specific Elective Courses (Semester Wise)

### Discipline Specific Elective – I

| Semester | Domain | Subjects |
|---|---|---|
| 6 | COMMUNICATION | Satellite Communication |
| | EMBEDDED Systems | RFID and Flexible Sensors |
| | VLSI | CAD for VLSI |

### Discipline Specific Elective – II

| Semester | Domain | Subjects |
|---|---|---|
| 6 | COMMUNICATION | RADAR and Navigation |
| | EMBEDDED Systems | MSP 430 Microcontroller |
| | Signal Processing | Image Processing |

### Discipline Specific Elective – III

| Semester | Domain | Subjects |
|---|---|---|
| 7 | COMMUNICATION | VoIP |
| | EMBEDDED Systems | IOT with Arduino and Raspberry Pi |
| | Signal Processing | Navigation and Remote Sensing |

### Discipline Specific Elective – IV

| Semester | Domain | Subjects |
|---|---|---|
| 7 | COMMUNICATION | Cognitive Radio Networks |
| | EMBEDDED Systems | Robotics and Automation |
| | VLSI | System on Chip |

### Discipline Specific Elective – V

| Semester | Domain | Subjects |
|---|---|---|
| 8 | COMMUNICATION | Wireless Sensor Networks |
| | VLSI | Low Power VLSI |
| | Embedded Systems | 1. Real Time Embedded Systems<br>2. Open Source Systems |