



MARRI LAXMAN REDDY
INSTITUTE OF TECHNOLOGY AND MANAGEMENT

(AN AUTONOMOUS INSTITUTION)

(Approved by AICTE, New Delhi & Affiliated to JNTUH, Hyderabad)

Accredited by NBA and NAAC with 'A' Grade & Recognized Under Section 2(f) & 12(B) of the UGC act, 1956

B.Tech - Electronics and Communication Engineering
Course Structure (R20)
Applicable From 2020-21 Admitted Batch
Structure Breakup

| S. No | Category | Breakup of credits (Total 160 credits) |
|-------|--|---|
| 1 | Humanities and Social Sciences including Management courses (HSMC) | 10 |
| 2 | Basic Sciences Courses (BS) | 23 |
| 3 | Engineering Sciences courses including Workshop, Drawing basics of electrical/mechanical/computer etc.(ES) | 24 |
| 4 | Professional Core courses (PC) | 63 |
| 5 | Professional Electives (PE) | 18 |
| 6 | Open Electives (OE) | 9 |
| 7 | Project work, Seminar and Internship in industry or elsewhere (PS) | 13 |
| 8 | Mandatory Courses | - |
| | TOTAL | 160 |

I YEAR I SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|--|-------------|------------------|----------|-----------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2010001 | Engineering Mathematics-I | BS | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | 2010006 | Applied Physics | BS | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | 2010501 | Programming for Problem Solving | ES | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 4 | 2010071 | Applied Physics Laboratory | BS | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 5 | 2010571 | Programming for Problem Solving Laboratory | ES | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 6 | 2010371 | Engineering Drawing Practice | ES | 1 | 0 | 4 | 3 | 30 | 70 | 100 |
| | | Induction Programme | - | - | - | - | - | - | - | - |
| TOTAL | | | | 10 | 3 | 10 | 18 | 180 | 420 | 600 |

I YEAR II SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|---|-------------|------------------|----------|-----------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2020002 | Engineering Mathematics-II | BS | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | 2020008 | Engineering Chemistry | BS | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | 2020009 | Communicative English | HS | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 4 | 2020502 | Data Structures | ES | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | 2020073 | Engineering Chemistry Laboratory | BS | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 6 | 2020074 | Communicative English Language Laboratory | HS | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 7 | 2020572 | Data Structures Laboratory | ES | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 8 | 2020372 | Engineering Workshop | ES | 1 | 0 | 3 | 2.5 | 30 | 70 | 100 |
| 9 | 2020321 | Environmental Science | *MC | 3 | 0 | 0 | 0 | - | - | - |
| TOTAL | | | | 15 | 2 | 10 | 19 | 240 | 560 | 800 |

***MC- Satisfactory/Unsatisfactory**

II YEAR I SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|--|-------------|------------------|----------|----------|-------------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2030003 | Laplace Transforms, Series Solutions and Complex Variables | BS | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | 2030411 | Electronic Devices and Circuits | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | 2030201 | Basic Electrical Engineering | PC | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | 2030509 | Java Programming | ES | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 5 | 2030412 | Signals and Systems | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 6 | 2030473 | Electronic Devices and Circuits Laboratory | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | 2030271 | Basic Electrical Engineering Laboratory | PC | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 8 | 2030570 | Java Programming Laboratory | ES | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 9 | 2030023 | Constitution of India | *MC | 2 | 0 | 0 | 0 | - | - | - |
| TOTAL | | | | 16 | 3 | 7 | 20.5 | 240 | 560 | 800 |

II YEAR II SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|---|-------------|------------------|----------|----------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2040401 | Analog and Pulse Circuits | PC | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | 2040413 | Analog and Digital Communication | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | 2040414 | Digital System Design | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 4 | 2040505 | Python Programming | ES | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 5 | 2040415 | Electromagnetic Theory and Transmission Lines | PC | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | 2040471 | Analog and Pulse Circuits Laboratory | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | 2040575 | Python Programming Laboratory | ES | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 8 | 2040474 | Basic Simulation & Digital System Design Laboratory | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 9 | 2040022 | Gender Sensitization | *MC | 2 | 0 | 0 | 0 | - | - | - |
| TOTAL | | | | 16 | 2 | 8 | 20 | 240 | 560 | 800 |

***MC- Satisfactory/Unsatisfactory**

III YEAR I SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|---|-------------|------------------|----------|----------|-------------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2050237 | Control Systems | PC | 2 | 1 | 0 | 3 | 30 | 70 | 100 |
| 2 | 2050416 | Linear and Digital IC Applications | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | 2050010 | Business Economics and Financial Analysis | HS | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | 2050417 | Probability Theory and Stochastic Processes | PC | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | | Professional Elective – I | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | 2050503 | Data Base Management Systems | ES | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 7 | 2050475 | Analog and Digital Communications Lab | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 8 | 2050573 | Data Base Management Systems Laboratory | ES | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 9 | 2050075 | Advanced English Language Communication Skills Laboratory | HS | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 10 | 2050024 | Intellectual Property Rights | *MC | 2 | 0 | 0 | 0 | - | - | - |
| TOTAL | | | | 18 | 2 | 7 | 21.5 | 270 | 630 | 900 |

III YEAR II SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|---|-------------|------------------|----------|----------|-------------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2060418 | Digital Signal Processing | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | 2060403 | Micro Processors and Micro Controllers | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | | Open Elective – I | OE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | | Professional Elective - II | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | 2060419 | VLSI Design | PC | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | 2060472 | Micro Processors and Micro Controllers Lab | PC | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 7 | 2060476 | Digital Signal Processing Laboratory | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 8 | 2060477 | Linear and Digital IC Applications Laboratory | PC | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 9 | 2060025 | Professional Ethics | *MC | 2 | 0 | 0 | 0 | - | - | - |
| TOTAL | | | | 17 | 2 | 7 | 20.5 | 240 | 560 | 800 |

*MC- Satisfactory/Unsatisfactory

IV YEAR I SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|--|-------------|------------------|----------|-----------|-------------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | 2070011 | Fundamentals of Management | HS | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | 2070420 | Antennas and Microwave Engineering | PC | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | | Professional Elective – III | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | | Professional Elective – IV | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | | Open Elective - II | OE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | 2070478 | ECAD & VLSI Design Laboratory | PC | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | 2070479 | Microwave Engineering Laboratory | PC | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 8 | 2070480 | Industry Oriented Mini Project / Summer Internship** | PS | 0 | 0 | 4 | 2 | 30 | 70 | 100 |
| 9 | 2070481 | Project Stage - I | PS | 0 | 0 | 6 | 3 | 30 | 70 | 100 |
| TOTAL | | | | 15 | 1 | 15 | 23.5 | 270 | 630 | 900 |

IV YEAR II SEMESTER

| S. No. | Course Code | Course Name | Course Area | Periods per week | | | Credits | Scheme of Examination Maximum Marks | | |
|--------------|-------------|----------------------------|-------------|------------------|----------|-----------|-----------|-------------------------------------|----------------|------------|
| | | | | L | T | P | | Internal (CIE) | External (SEE) | Total |
| 1 | | Open Elective - III | OE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | | Professional Elective - V | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 3 | | Professional Elective - VI | PE | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | 2080482 | Technical Seminar | PS | 0 | 0 | 2 | 1 | 100 | - | 100 |
| 5 | 2080483 | Project Stage - II | PS | 0 | 0 | 14 | 7 | 30 | 70 | 100 |
| TOTAL | | | | 9 | 0 | 16 | 17 | 220 | 280 | 500 |

****Students have to complete Industry Oriented Mini Project / Summer Internship in III Year- II Semester Summer break, Evaluation is carried in IV-I semester.**

Professional Elective (PE) Courses

PE I - Professional Elective I

| S. No. | Course Code | Course Title |
|--------|-------------|---|
| 1 | 2050441 | Digital Design using Verilog |
| 2 | 2050442 | Electronic Measurements and Instrumentation |
| 3 | 2050443 | Spread Spectrum Communications |
| 4 | 2050444 | FPGA Programming |

PE II - Professional Elective II

| S. No. | Course Code | Course Title |
|--------|-------------|--------------------------------|
| 1 | 2060445 | Digital Image Processing |
| 2 | 2060446 | Cellular Mobile Communications |
| 3 | 2060571 | Artificial Neural Networks |
| 4 | 2066703 | R - Programming |

PE III - Professional Elective III

| S. No. | Course Code | Course Title |
|--------|-------------|--------------------------------------|
| 1 | 2070447 | Wireless Communications and Networks |
| 2 | 2070517 | Internet of Things |
| 3 | 2070448 | Radar Systems |
| 4 | 2070449 | Satellite Communications |

PE IV - Professional Elective IV

| S. No. | Course Code | Course Title |
|--------|-------------|---------------------------------|
| 1 | 2070450 | Embedded System Design |
| 2 | 2070547 | Cryptography & Network Security |
| 3 | 2070543 | Artificial Intelligence |
| 4 | 2070510 | Operating System |

PE V - Professional Elective V

| S. No. | Course Code | Course Title |
|--------|-------------|---------------------------------|
| 1 | 2080451 | System Design using FPGAs |
| 2 | 2080452 | Optical Communications |
| 3 | 2080518 | Machine Learning |
| 4 | 2080453 | Introduction to Nano Technology |

PE VI - Professional Elective VI

| S. No. | Course Code | Course Title |
|--------|-------------|------------------------------------|
| 1 | 2080565 | Cyber Security |
| 2 | 2080454 | Analog CMOS IC Design |
| 3 | 2080455 | Global Navigation Satellite System |
| 4 | 2080456 | Computer Vision |

Open Elective (OE) Courses

| S. No | Open Elective | Course Code | Course Title |
|-------|---------------------|-------------|---|
| 1 | Open Elective - I | 2060404 | Electronic Communications & Applications |
| 2 | Open Elective – II | 2070405 | Introduction to VLSI & Embedded Systems |
| 3 | Open Elective - III | 2080406 | Global Navigation Satellite System & Applications |

Note: *Open Elective subject's syllabus is provided in a separate document. Student should take open electives from the list of offered by other departments/branches only.*