



**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 (MLRS-R22)**  
**Applicable From 2022-23 Admitted Batch**  
**Structure Breakup**

| S. No        | Category   | Breakup of credits<br>(Total 160 credits) |
|--------------|--|---|
| 1            | Humanities and Social Sciences including Management Courses (HSMC)   | 10  |
| 2            | Basic Sciences Courses (BS)  | 22.5                                      |
| 3            | Engineering Sciences Courses including Workshop, Drawing basics of Electrical/Mechanical/Computer etc.(ES) | 19.5                                      |
| 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)   | 18  |
| 8            | Mandatory Courses  | -   |
| <b>TOTAL</b> |  | <b>160</b>                                |

**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            | 2210001     | Matrix Algebra & Calculus                             | BS          | 3                | 1        | 0         | 4         | 40                                  | 60             | 100        |
| 2            | 2210008     | Applied Physics                                       | BS          | 3                | 1        | 0         | 4         | 40                                  | 60             | 100        |
| 3            | 2210501     | Programming for Problem Solving                       | ES          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 4            | 2210372     | Engineering Workshop                                  | ES          | 0                | 1        | 3         | 2.5       | 40                                  | 60             | 100        |
| 5            | 2210010     | English for Skill Enhancement                         | HS          | 2                | 0        | 0         | 2         | 40                                  | 60             | 100        |
| 6            | 2210421     | Elements of Electronics and Communication Engineering | PC          | 0                | 0        | 2         | 1         | 50                                  | -              | 50         |
| 7            | 2210071     | Applied Physics Laboratory                            | BS          | 0                | 0        | 3         | 1.5       | 40                                  | 60             | 100        |
| 8            | 2210571     | Programming for Problem Solving Laboratory            | ES          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 9            | 2210073     | English Language and Communications Skills Laboratory | HS          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 10           | 2210021     | Environmental Science                                 | *MC         | 3                | 0        | 0         | 0         | -                                   | -              | -          |
|              |             | Induction Programme                                   | -           | -                | -        | -         | -         | -                                   | -              | -          |
| <b>TOTAL</b> |             |   |             | <b>14</b>        | <b>3</b> | <b>12</b> | <b>20</b> | <b>370</b>                          | <b>480</b>     | <b>850</b> |

**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            | 2220002     | Differential Equations and Vector Calculus | BS          | 3                | 1        | 0         | 4         | 40                                  | 60             | 100        |
| 2            | 2220009     | Engineering Chemistry                      | BS          | 3                | 1        | 0         | 4         | 40                                  | 60             | 100        |
| 3            | 2220371     | Engineering Drawing Practice               | ES          | 1                | 0        | 4         | 3         | 40                                  | 60             | 100        |
| 4            | 2220201     | Basic Electrical Engineering               | PC          | 2                | 0        | 0         | 2         | 40                                  | 60             | 100        |
| 5            | 2220422     | Electronic Devices and Circuits            | PC          | 2                | 0        | 0         | 2         | 40                                  | 60             | 100        |
| 6            | 2220572     | Data Structures Laboratory                 | ES          | 0                | 1        | 2         | 2         | 40                                  | 60             | 100        |
| 7            | 2220072     | Engineering Chemistry Laboratory           | BS          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 8            | 2220271     | Basic Electrical Engineering Laboratory    | PC          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 9            | 2220476     | Electronic Devices and Circuits Laboratory | PC          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| <b>TOTAL</b> |             |  |             | <b>11</b>        | <b>3</b> | <b>12</b> | <b>20</b> | <b>360</b>                          | <b>540</b>     | <b>900</b> |

**\*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            | 2230003     | Numerical Methods and Complex Variables     | BS          | 3                | 1        | 0        | 4         | 40                                  | 60             | 100        |
| 2            | 2230423     | Digital System Design                       | PC          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 3            | 2230424     | Signals and Systems                         | PC          | 3                | 1        | 0        | 4         | 40                                  | 60             | 100        |
| 4            | 2230425     | Probability Theory and Stochastic Processes | ES          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 5            | 2230426     | Analog and Pulse Circuits                   | PC          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 6            | 2230477     | Digital System Design Laboratory            | PC          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 7            | 2230478     | Basic Simulation Laboratory                 | PC          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 8            | 2230479     | Analog and Pulse Circuits Laboratory        | PC          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 9            | 2230022     | Gender Sensitization                        | *MC         | 3                | 0        | 0        | 0         | -                                   | -              | -          |
| <b>TOTAL</b> |             |   |             | <b>18</b>        | <b>2</b> | <b>6</b> | <b>20</b> | <b>320</b>                          | <b>480</b>     | <b>800</b> |

**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            | 2240016     | Business Economics and Financial Analysis     | HS          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 2            | 2240427     | Electromagnetic Theory and Transmission Lines | PC          | 2                | 1        | 0         | 3         | 40                                  | 60             | 100        |
| 3            | 2240428     | Analog and Digital Communication              | PC          | 2                | 1        | 0         | 3         | 40                                  | 60             | 100        |
| 4            | 2240429     | Linear and Digital IC Applications            | PC          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 5            | 2240503     | Python Programming                            | ES          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 6            | 2240480     | Analog and Digital Communication Laboratory   | PC          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 7            | 2240481     | Linear and Digital IC Applications Laboratory | PC          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 8            | 2240573     | Python Programming Laboratory                 | ES          | 0                | 0        | 2         | 1         | 40                                  | 60             | 100        |
| 9            | 2240491     | Field Based Project                           | PS          | 0                | 0        | 4         | 2         | 50                                  | -              | 50         |
| 10           | 2240023     | Constitution of India                         | *MC         | 3                | 0        | 0         | 0         | -                                   | -              | -          |
| <b>TOTAL</b> |             |   |             | <b>16</b>        | <b>2</b> | <b>10</b> | <b>20</b> | <b>370</b>                          | <b>480</b>     | <b>850</b> |

**\*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            | 2250202     | Control Systems                                  | PC          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 2            | 2250404     | Microprocessors and Microcontrollers             | PC          | 3                | 1        | 0        | 4         | 40                                  | 60             | 100        |
| 3            | 2250430     | Digital Design Through Verilog                   | PC          | 3                | 1        | 0        | 4         | 40                                  | 60             | 100        |
| 4            |             | Professional Elective – I                        | PE          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 5            |             | Open Elective – I                                | OE          | 3                | 0        | 0        | 3         | 40                                  | 60             | 100        |
| 6            | 2250011     | Advanced English Communication Skills Laboratory | HS          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 7            | 2250473     | Microprocessors and Microcontrollers Laboratory  | PC          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 8            | 2250574     | Database Management Systems Laboratory           | ES          | 0                | 0        | 2        | 1         | 40                                  | 60             | 100        |
| 9            | 2250024     | Intellectual Property Rights                     | *MC         | 3                | 0        | 0        | 0         | -                                   | -              | -          |
| <b>TOTAL</b> |             |  |             | <b>18</b>        | <b>1</b> | <b>8</b> | <b>20</b> | <b>320</b>                          | <b>480</b>     | <b>800</b> |

**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            | 2260431     | Antennas and Wave Propagation             | PC          | 2                | 1        | 0         | 3         | 40                                  | 60             | 100        |
| 2            | 2260432     | Digital Signal Processing                 | PC          | 2                | 1        | 0         | 3         | 40                                  | 60             | 100        |
| 3            | 2260433     | VLSI Design                               | PC          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 4            |             | Professional Elective - II                | PE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 5            |             | Open Elective – II                        | OE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 6            | 2260482     | Digital Signal Processing Laboratory      | PC          | 0                | 0        | 3         | 1.5       | 40                                  | 60             | 100        |
| 7            | 2260483     | VLSI Design Laboratory                    | PC          | 0                | 0        | 3         | 1.5       | 40                                  | 60             | 100        |
| 8            | 2260492     | Industry Oriented Mini Project/Internship | PS          | 0                | 0        | 4         | 2         | -                                   | 100            | 100        |
| 9            | 2220021     | Environmental Science                     | *MC         | 3                | 0        | 0         | 0         | -                                   | -              | -          |
| <b>TOTAL</b> |             |   |             | <b>13</b>        | <b>2</b> | <b>10</b> | <b>20</b> | <b>280</b>                          | <b>520</b>     | <b>800</b> |

\*MC- Satisfactory/Unsatisfactory

**Environmental Science in III Yr II Sem Should be Registered by Lateral Entry Students only.**

**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            | 2270434     | Embedded System Design                         | PC          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 2            | 2270435     | Microwave and Optical Communication            | PC          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 3            | 2270017     | Fundamentals of Management                     | HS          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 4            |             | Professional Elective – III                    | PE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 5            |             | Open Elective – III                            | OE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 6            | 2270484     | Microwave and Optical Communication Laboratory | PC          | 0                | 0        | 4         | 2         | 40                                  | 60             | 100        |
| 7            | 2270493     | Project Stage - I                              | PS          | 0                | 0        | 6         | 3         | -                                   | 100            | 100        |
| <b>TOTAL</b> |             |  |             | <b>15</b>        | <b>0</b> | <b>10</b> | <b>20</b> | <b>240</b>                          | <b>460</b>     | <b>700</b> |

**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            |             | Professional Elective - IV | PE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 2            |             | Professional Elective - V  | PE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 3            |             | Professional Elective - VI | PE          | 3                | 0        | 0         | 3         | 40                                  | 60             | 100        |
| 4            | 2280494     | Technical Seminar          | PS          | 0                | 0        | 4         | 2         | 100                                 | -              | 100        |
| 5            | 2280495     | Project Stage - II         | PS          | 0                | 0        | 18        | 9         | 40                                  | 60             | 100        |
| <b>TOTAL</b> |             |                            |             | <b>9</b>         | <b>0</b> | <b>22</b> | <b>20</b> | <b>260</b>                          | <b>240</b>     | <b>500</b> |

**Professional Elective (PE) Courses**

**PE I - Professional Elective I**

| S. No. | Course Code | Course Title                                |
|--------|-------------|---|
| 1      | 2250436     | Electronic Measurements and Instrumentation |
| 2      | 2250522     | R - Programming                             |
| 3      | 2250437     | Spread Spectrum Communications              |
| 4      | 2250509     | Operating Systems                           |

**PE II - Professional Elective II**

| S. No. | Course Code | Course Title                   |
|--------|-------------|--------------------------------|
| 1      | 2260438     | Digital Image Processing       |
| 2      | 2260439     | Cellular Mobile Communications |
| 3      | 2260521     | Artificial Neural Networks     |
| 4      | 2260520     | Internet of Things             |

**PE III - Professional Elective III**

| S. No. | Course Code | Course Title                         |
|--------|-------------|--------------------------------------|
| 1      | 2270440     | Wireless Communications and Networks |
| 2      | 2270441     | Test and Testability                 |
| 3      | 2270442     | Fundamentals of Robotics             |
| 4      | 2290519     | Cryptography & Network Security      |

**PE IV - Professional Elective IV**

| S. No. | Course Code | Course Title                |
|--------|-------------|-----------------------------|
| 1      | 2280443     | Biomedical Instrumentation  |
| 2      | 2280444     | System on Chip Architecture |
| 3      | 2280516     | Artificial Intelligence     |
| 4      | 2280445     | Satellite Communications    |

**PE V - Professional Elective V**

| S. No. | Course Code | Course Title                    |
|--------|-------------|---------------------------------|
| 1      | 2280446     | Analog CMOS IC Design           |
| 2      | 2280447     | Radar Systems                   |
| 3      | 2280514     | Machine Learning                |
| 4      | 2280448     | Introduction to Nano Technology |

**PE VI - Professional Elective VI**

| S. No. | Course Code | Course Title                       |
|--------|-------------|------------------------------------|
| 1      | 2280523     | Cyber Security                     |
| 2      | 2280449     | FPGA Programming                   |
| 3      | 2280450     | Global Navigation Satellite System |
| 4      | 2280451     | Computer Vision                    |

**Open Elective (OE) Courses**

| S. No | Open Elective       | Course Code | Course Title                                      |
|-------|---------------------|-------------|---|
| 1     | Open Elective - I   | 2250406     | Electronic Communications & Applications          |
| 2     | Open Elective – II  | 2260407     | Introduction to VLSI & Embedded Systems           |
| 3     | Open Elective - III | 2270408     | 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.*