#### B.Tech (Electronics and Communication Engineering) – 2023 Batch

#### **Program Educational Objectives (PEOs)**

- **PEO I:** Graduates demonstrate their technical knowledge in the field of Electronics and Communication Engineering for real world applications.
- **PEO II:** Graduates exhibit competence as academicians, researchers and entrepreneurs by pursuing continuous professional development.
- **PEO III:** Graduates contribute to the development of the society with professional ethics.

#### **Program Specific Outcomes (PSOs)**

- PSO 1: Impart solid foundation in mathematical, scientific and engineering fundamentals required to solve electronics and communication engineering problems.
- **PSO 2:** Specify, analyze and design the electronic systems using semiconductor technology.
- **PSO 3:** Understand, analyze, design and simulate the various communication systems, data processing techniques and validate their performance for practical applications.
- **PSO 4:** Specify, analyze, design, implement and test the analog and digital systems using the state of art components, software tools and ICT.

#### COURSE COMPONENTS & CURRICULUM

|      | PROGRAM STRUCTURE  |      |         |
|------|--|------|---------|
| S.No | Category   |      | Credits |
| 1    | Basic Science Courses  | BSC  | 12      |
| 2    | Engineering Science Courses including workshop, drawing, basics of electrical/mechanical/computer etc. | ESC  | 20      |
| 3    | Humanities and Social Sciences including Management Courses  | HSMC | 8       |
| 4    | Professional core Courses  | PCC  | 65      |
| 5    | Professional Elective Courses relevant to chosen specialization/branch                                 | PEC  | 24/30   |
| 6    | Open Electives – Electives from other technical and /or emerging Courses                               | OEC  | 6       |
| 7    | Project and Internship   | P    | 18/12   |
| 8    | Mandatory Courses  | MC   | 0       |
| 9    | Skill based Courses  | SBC  | 7       |
| 10   | Online Courses   |      | 5*      |
|      | Total Credits  |      | 160+5*  |

\*The students shall earn 5 credits through online courses between 2<sup>nd</sup> and 7<sup>th</sup> semester (both inclusive)

|     |                       | Basic Science Courses (BSC)                               |       |               |     |         |
|-----|-----------------------|---|-------|---------------|-----|---------|
| Sl. | Course Code           | Course Title  |       | urs j<br>week | •   | Credits |
| No  |                       |   | L     | T             | P   |         |
| 1   | 22EC1001              | Physical Electronics                                      | 2     | 0             | 2   | 2       |
| 2   | 22EC1002              | Physical Electronics Laboratory                           | 0     | 0             | 2   | 1       |
| 3   | 20MA1009              | Calculus and Differential Equations                       | 3     | 0             | 0   | 3       |
| 4   | 20MA1010              | Linear Algebra, Transforms and Numerical<br>Methods       | 3     | 0             | 0   | 3       |
| 5   | 20MA2006              | Probability and Stochastic processes                      | 3     | 0             | 0   | 3       |
|     |                       |   | Total |               | l   | 12      |
|     |                       | <b>Engineering Science Courses (ESC)</b>                  |       |               |     |         |
| Sl. |                       |   | Ho    | urs           | per | Credits |
| No  | Course Code           | Course Title  |       | week          |     |         |
| 110 |                       |   | L     | T             | P   |         |
| 1   | 20EC1001/<br>20EC1002 | Python Programming / R Programming                        | 2     | 0             | 0   | 2       |
| 2   | 18ME1002              | Engineering Graphics                                      | 0     | 0             | 2   | 1       |
| 3   | 22EC1004              | Fundamentals of Electrical and Electronics<br>Engineering | 3     | 0             | 0   | 3       |
| 4   | 23EC1002              | Programming for Problem Solving with C                    | 3     | 0             | 0   | 3       |
| 5   | 20EC1004              | C Programming Laboratory                                  | 0     | 0             | 2   | 1       |

| 6  | 23EC1004   | C++ and Data Structures   | 3  | 0                                      | 0  | 3  |
|--|--|---|--|--|--|--|
| 7  | 23EC1005   | C++ and Data Structures Laboratory  | 0  | 0                                      | 2  | 1  |
| 8  | 23EC2025   | Electromagnetic Fields and Waveguides   | 3  | 0                                      | 0  | 3  |
| 9  | 23EC2012   | Network Theory  | 3  | 0                                      | 0  | 3  |
|  |  |   | ,  | Tota                                   | l  | 20   |
|  |  | Skill Based Courses (SBC)   |  | •                                      |  |  |
|  |  |   |  |  |  |  |
| 1  | 22EC1003   | PCB Design Using CAD Tools  | 0  | 0                                      | 2  | 1  |
| 2  | 20EC1005   | Electronics for Intelligent Machines laboratory   | 0  | 0                                      | 2  | 1  |
| 3  | 19EC2001   | Electronics for Intelligent Machines  | 2  | 0                                      | 0  | 2  |
| 4  | 23EC1006   | Programming for Circuit Design  | 3  | 0                                      | 0  | 3  |
|  |  |   |  | <b>Fota</b>                            |  | 7  |
|  | Humanitie  | es & Social Sciences Including Management Course  |  |  |  | 1  |
| Sl.  |  |   |  | urs                                    |  | Credits  |
| No   | Course Code  | Course Title  |  | week                                   |  |  |
|  | <u> </u>   |   | L  | T                                      | P  | _  |
| •  | Category-1   | Humanities, Social Sciences and Management  |  |  |  | 5  |
| 1  | 203.402005   | Courses   | 1  | 0                                      |  | 1  |
| 1  | 20MS2005   | Soft Skill  | 1  | 0                                      | 0  | 1  |
|  | 19EN1001/  |   | 2  | 0                                      | 0  | 2  |
| 2  | 19LN1001/  | English / German / Basic French   |  |  |  |  |
| 3  | 17LN2007<br>20MS2006   | Professional Ethics   | 2  | 0                                      | 0  | 2  |
|  |  |   |  | U                                      | U  | 3  |
| 1  | Category-2<br>23MS2001   | Entrepreneurship Concepts and Application in Entrepreneurship   | 3  | 0                                      | 0  | 3  |
| 1  | 2510152001   | Concepts and Application in Endepreneurship   |  | Tota                                   | l  | 8  |
|  |  | PROFESSIONAL CORE COURSES (PCC)   |  | I Ota                                  |  | O  |
|  |  |   | Шо   |  | 2011   | 1  |
|  |  |   | Hours per  |  |  |  |
| Sl.  | Course Code  | Course Title  |  | -                                      |  | Credits  |
| Sl.<br>No  | Course Code  | Course Title  | ,  | week                                   | ·  | Credits  |
| No   |  |   | L  | week<br>T                              | P  |  |
| <b>No</b> 1  | 20EC2002   | Electronic Devices  | L 3  | week<br>T                              | ·  | Credits 3  |
| No   | 20EC2002<br>18EC2002   | Electronic Devices Electronic Devices Laboratory  | L  | week<br>T                              | <b>P</b> 0   | 3 1  |
| No 1 2   | 20EC2002<br>18EC2002<br>22EC2013   | Electronic Devices Electronic Devices Laboratory Digital System Design  | L 3 0  | <b>Week T</b> 0 0                      | <b>P</b> 0 2   | 3  |
| No 1 2 3 4   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory   | L<br>3<br>0<br>2<br>0  | 0<br>0<br>1<br>0                       | P 0 2 0  | 3<br>1<br>3<br>1   |
| No 1 2 3 4 5   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems   | L<br>3<br>0<br>2<br>0<br>2   | week                                   | P 0 2 0 2 2  | 3<br>1<br>3<br>1<br>3  |
| No 1 2 3 4   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems  | L<br>3<br>0<br>2<br>0  | T                                      | P 0 2 0 2 0 0  | 3<br>1<br>3<br>1   |
| No 1 2 3 4 5 6   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems   | L 3 0 2 0 2 3  | T                                      | P 0 2 0 2 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3   |
| No 1 2 3 4 5 6 7   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits  | L 3 0 2 0 2 3 3 3  | week T 0 0 1 0 1 0 0 1 0               | P 0 2 0 2 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>3  |
| No 1 2 3 4 5 6 7 8   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory  | L 3 0 2 0 2 3 3 3 0 0 3 0 0  | week T 0 0 1 0 1 0 0 0 0 0 0           | P 0 2 0 2 0 0 0 0 2  | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1   |
| No 1 2 3 4 5 6 7 8 9   | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits  | L 3 0 2 0 2 3 3 0 0 3  | week T 0 0 1 0 1 0 0 0 0 0 0 0 0       | P 0 2 0 0 0 0 0 2 0 0 2 0 0 0 0 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>1<br>3   |
| No 1 2 3 4 5 6 7 8 9 10                                      | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory   | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3   | week T 0 0 1 0 1 0 0 0 0 0 0 0 0 0     | P 0 2 0 0 0 0 0 2 0 2  | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3  |
| No  1 2 3 4 5 6 7 8 9 10 11                                  | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits   | L 3 0 2 0 2 3 3 0 0 3 0 0 3  | T                                      | P 0 2 0 0 0 0 0 0 2 0 0 0 0 0 0 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3  |
| No 1 2 3 4 5 6 7 8 9 10 11 12                                | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory  | L 3 0 2 0 2 3 3 3 0 0 3 0 3 3 3 3 3  | week T 0 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 | P<br>0<br>2<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>2<br>0<br>2<br>0<br>2  | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3  |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13                             | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2011   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits   | L 3 0 2 0 2 3 3 0 3 0 3 0 3 3 3 3 3  | T                                      | P 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3  |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14                          | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture   | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | T                                      | P<br>0<br>2<br>0<br>2<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0   | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3   |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15                       | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015   | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing   | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0   | T                                      | P 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3  |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18              | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017                                     | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network   | L 3 0 2 0 2 3 3 0 3 0 3 0 3 3 0 3 3 3 3 3  | T                                      | P<br>0<br>2<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3 |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18              | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007                         | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design   | L 3 0 2 0 2 3 3 0 3 0 3 3 0 3 3 3 3 3 3 3  | T                                      | P 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0  | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3   |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20        | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007<br>23EC2019                         | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation   | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0      | T                                      | P<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0           | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3           |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21     | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007                         | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation Microwave and Optical Communication                                     | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | T                                      | P<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0           | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3   |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20        | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007<br>23EC2019<br>18EC2021 | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation Microwave and Optical Communication Microwave and Optical Communication | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0      | T                                      | P<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0           | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3           |
| No  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007<br>23EC2019                         | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation Microwave and Optical Communication                                     | L 3 0 2 0 2 3 3 0 3 0 3 0 3 3 3 3 3 3 0 0  | T                                      | P<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0                | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3   |
| No 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21     | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007<br>23EC2019<br>18EC2021 | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation Microwave and Optical Communication Microwave and Optical Communication | L<br>3<br>0<br>2<br>0<br>2<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>3<br>0<br>3<br>0<br>3<br>0<br>3<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0 | T                                      | P<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0           | 3<br>1<br>3<br>1<br>3<br>3<br>3<br>1<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3   |
| No  1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 | 20EC2002<br>18EC2002<br>22EC2013<br>22EC2014<br>20EC2003<br>22EC2015<br>22EC2016<br>18EC2007<br>18EC2008<br>22EC2032<br>23EC2013<br>18EC2011<br>18EC2012<br>20EC2004<br>18EC2015<br>18EC2016<br>23EC2014<br>18EC2017<br>23EC2007<br>23EC2019<br>18EC2021 | Electronic Devices Electronic Devices Laboratory Digital System Design Digital System Design Laboratory Signals and Systems Communication Theory and Systems Digital Communication Analog and Digital Communication Laboratory Analog Circuits Analog Circuits Laboratory Microcontrollers Microcontrollers Laboratory Linear Integrated Circuits Computer Architecture Digital Signal Processing Digital Signal Processing Laboratory Control Systems Computer Network VLSI Design Antenna Theory and Wave Propagation Microwave and Optical Communication Laboratory                          | L 3 0 2 0 2 3 3 0 3 0 3 0 3 3 3 3 3 3 0 0  | T                                      | P<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>0<br>2<br>0<br>0<br>0<br>2<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0<br>0                | 3<br>1<br>3<br>1<br>3<br>3<br>1<br>3<br>1<br>3<br>1<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3   |

| 25                     | 23EC2008     | VLSI Design Laboratory                                  | 0                 | 0                | 2   | 1       |  |  |  |  |
|------------------------|--------------|---|-------------------|------------------|-----|---------|--|--|--|--|
| 26                     | 20EC2009     | Artificial Neural Networks and Deep Learning            | 2                 | 0                | 0   | 2       |  |  |  |  |
| 27                     | 23EC2011     | Digital Image Processing                                | 3                 | 0                | 0   | 3       |  |  |  |  |
| 28                     | 20EC2008     | 5G Communications                                       | 3                 | 0                | 0   | 3       |  |  |  |  |
|                        |              |   |                   | Tota             | l   | 65      |  |  |  |  |
|                        |              |   |                   |                  |     |         |  |  |  |  |
| PROJECT AND INTERNSHIP |              |   |                   |                  |     |         |  |  |  |  |
| Sl.                    |              |   | Ho                | urs j            | per | Credits |  |  |  |  |
| No                     | Course Code  | Course Title  |                   | week             |     |         |  |  |  |  |
| 140                    |              |   | L                 | T                | P   |         |  |  |  |  |
| 1                      | ITP2921      | Industrial Training -1                                  | 15                | Days             |     | 1       |  |  |  |  |
| 2                      | ISP2921      | Internship – 1  | 15                | Days             |     | 1       |  |  |  |  |
| 3                      | ISP2911      | Internship -2   | 30                | Days             |     | 2       |  |  |  |  |
| 4                      | 23EC2998/    | Project   |                   | -                |     | 8/14    |  |  |  |  |
|                        | 23EC2999     |   |                   |                  |     |         |  |  |  |  |
|                        |              |   | 1                 | Tota             | l   | 12/18   |  |  |  |  |
|                        |              | MANDATORY COURSES (MC)                                  |                   |                  |     |         |  |  |  |  |
| Sl.                    |              |   | Ho                | urs              | per | Credits |  |  |  |  |
| No                     | Course Code  | Course Title  |                   | week             | [   |         |  |  |  |  |
| 140                    |              |   | L                 | T                | P   |         |  |  |  |  |
| 1                      | 18MS2014     | Constitution of India                                   | 2                 | 0                | 0   | 0       |  |  |  |  |
| 2                      | 18CH2001     | Environmental Studies                                   | 2                 | 0                | 0   | 0       |  |  |  |  |
|                        |              |   | Total             |                  | l   | 0       |  |  |  |  |
|                        |              | ONLINE COURSES  |                   |                  | •   |         |  |  |  |  |
|                        | The students | s shall earn 5 credits through online courses between 2 | <sup>nd</sup> and | 17 <sup>th</sup> |     | 5       |  |  |  |  |
|                        |              | semester (both inclusive)                               |                   |                  |     |         |  |  |  |  |

**Professional Electives for Specialization in IoT** 

| Course Code | Course Title                      | L | T | P | Credits |
|-------------|-----------------------------------|---|---|---|---------|
| 22EC2021    | Industrial IoT                    | 3 | 0 | 0 | 3       |
| 22EC2022    | Building the Web of Things        | 3 | 0 | 0 | 3       |
| 22EC2023    | IoT Security and Trust            | 3 | 0 | 0 | 3       |
| 22EC2024    | Cognitive IoT                     | 3 | 0 | 0 | 3       |
| 22EC2025    | Energy Harvesting for IoT devices | 3 | 0 | 0 | 3       |
| 22EC2026    | IoT Data Analytics                | 3 | 0 | 0 | 3       |

**Professional Electives for Specialization in Artificial Intelligence** 

| Course Code | Course Title                               | L | T | P | Credits |
|-------------|--|---|---|---|---------|
| 22EC2005    | Pattern Recognition Techniques             | 3 | 0 | 0 | 3       |
| 22EC2006    | Deep Learning                              | 3 | 0 | 0 | 3       |
| 22EC2007    | Natural Language Processing                | 3 | 0 | 0 | 3       |
| 22EC2008    | Introduction to Human Computer Interaction | 3 | 0 | 0 | 3       |
| 22EC2009    | Bio-inspired Optimization Techniques       | 3 | 0 | 0 | 3       |
| 22EC2027    | Brain Computer Interface                   | 3 | 0 | 0 | 3       |

# SEMESTER-WISE CURRICULUM SEMESTER 1

| Course<br>Code         | Course Title   | Category | L | Т | P | Credits |
|------------------------|--|----------|---|---|---|---------|
| 22EC1001               | Physical Electronics                                   | BSC      | 2 | 0 | 0 | 2       |
| 22EC1004               | Fundamentals of Electrical and Electronics Engineering | ESC      | 3 | 0 | 0 | 3       |
| 20MA1009               | Calculus and Differential Equations                    | BSC      | 3 | 0 | 0 | 3       |
| 23EC1002               | Programming for Problem Solving with C                 | ESC      | 3 | 0 | 0 | 3       |
| 20EC1001               | Python Programming                                     | ESC      | 2 | 0 | 0 | 2       |
| 19EN1001/<br>19LN1001/ | English / German / Basic French                        | HSMC     | 2 | 0 | 0 | 2       |

| 17LN2007                |                                 |     |   |   |   |    |
|-------------------------|---------------------------------|-----|---|---|---|----|
| 18ME1002                | Engineering Graphics            | ESC | 0 | 0 | 2 | 1  |
| Mandatory course – I MC |                                 |     |   |   |   | 0  |
| LABORATORY COURSES      |                                 |     |   |   |   |    |
| 22EC1002                | Physical Electronics Laboratory | BSC | 0 | 0 | 2 | 1  |
| 20EC1004                | C Programming Laboratory        | ESC | 0 | 0 | 2 | 1  |
|                         | Total Credits                   |     |   |   |   | 18 |

## SEMESTER 2

| Course Code | Course Title                                     | Category | L | T | P | Credits |
|-------------|--|----------|---|---|---|---------|
| 20MA1010    | Linear Algebra, Transforms and Numerical Methods | BSC      | 3 | 0 | 0 | 3       |
| 23EC1004    | C++ and Data Structures                          | ESC      | 3 | 0 | 0 | 3       |
| 23EC2012    | Network Theory                                   | ESC      | 3 | 0 | 0 | 3       |
| 19EC2001    | Electronics for Intelligent Machines             | SBC      | 2 | 0 | 0 | 2       |
| 20MS2005    | Soft Skills                                      | HSMC     | 1 | 0 | 0 | 1       |
| ITP2921     | Industrial training -1                           | P        | 0 | 0 | 2 | 1       |
|             | Mandatory Course-II                              | MC       | 3 | 0 | 0 | 0       |
| 23EC1006    | Programming for Circuit Design                   | SBC      | 3 | 0 | 0 | 3       |
| 23MS2001    | Concepts and Application in Entrepreneurship     | HSMC     | 3 | 0 | 0 | 3       |
|             | LABORATORY COURSES                               |          |   |   |   |         |
| 23EC1005    | C++ and Data Structures Laboratory               | ESC      | 0 | 0 | 2 | 1       |
| 20EC1005    | Electronics for Intelligent Machines Laboratory  | SBC      | 0 | 0 | 2 | 1       |
| 22EC1003    | PCB Design using CAD Tools                       | SBC      | 0 | 0 | 2 | 1       |
|             | Total Credits                                    |          |   |   |   | 22*     |

# \*Mandatory MOOC for 1 Credit

# SEMESTER 3

| Course Code | Course Title                          | Category | L | T | P | Credits |  |
|-------------|---------------------------------------|----------|---|---|---|---------|--|
| 20MA2006    | Probability and Stochastic Process    | BSC      | 3 | 0 | 0 | 3       |  |
| 20EC2002    | Electronic Devices                    | PCC      | 3 | 0 | 0 | 3       |  |
| 22EC2013    | Digital System Design                 | PCC      | 2 | 1 | 0 | 3       |  |
| 20EC2003    | Signals and Systems                   | PCC      | 2 | 1 | 0 | 3       |  |
| 23EC2025    | Electromagnetic Fields and Waveguides | ESC      | 3 | 0 | 0 | 3       |  |
| 20MS2006    | Professional Ethics                   | HSMC     | 2 | 0 | 0 | 2       |  |
| ISP2921     | Internship - 1                        | P        | 0 | 0 | 2 | 1       |  |
|             | LABORATORY COURSES                    |          |   |   |   |         |  |
| 18EC2002    | Electronic Devices Laboratory         | PCC      | 0 | 0 | 2 | 1       |  |
| 22EC2014    | Digital System Design Laboratory      | PCC      | 0 | 0 | 2 | 1       |  |
|             | Total Credits                         |          |   |   |   | 20      |  |

## SEMESTER 4

| Course Code | Course Title                         | Category | L | T | P | Credits |
|-------------|--------------------------------------|----------|---|---|---|---------|
| 22EC2015    | Communication Theory and Systems     | PCC      | 3 | 0 | 0 | 3       |
| 18EC2015    | Digital Signal Processing            | PCC      | 3 | 0 | 0 | 3       |
| 18EC2008    | Analog Circuits                      | PCC      | 3 | 0 | 0 | 3       |
| 18EC2012    | Linear Integrated Circuits           | PCC      | 3 | 0 | 0 | 3       |
| 20EC2004    | Computer Architecture                | PCC      | 3 | 0 | 0 | 3       |
|             | Professional Elective - 1            | PEC      | 3 | 0 | 0 | 3       |
|             |                                      |          |   |   |   |         |
|             | LABORATORY COUR                      | SES      |   |   |   |         |
| 18EC2016    | Digital Signal Processing Laboratory | PCC      | 0 | 0 | 2 | 1       |
| 22EC2032    | Analog Circuits Laboratory           | PCC      | 0 | 0 | 2 | 1       |
|             | Total Credits                        |          |   |   |   | 20*     |

# \*Mandatory MOOC for 2 credits

## SEMESTER 5

| Course Code | Course Title | Category | T | Т | P | Credite |
|-------------|--------------|----------|---|---|---|---------|
| Comsecode   | Comise time  | Calegory | 1 |   |   |         |

| 23EC2013           | Microcontrollers                    | PCC | 3   | 0 | 0 | 3  |
|--------------------|-------------------------------------|-----|-----|---|---|----|
| 23EC2019           | Antenna Theory and Wave Propagation | PCC | 3   | 0 | 0 | 3  |
| 22EC2016           | Digital Communication               | PCC | 3   | 0 | 0 | 3  |
| 23EC2011           | Digital Image Processing            | PCC | 3   | 0 | 0 | 3  |
|                    | Professional Elective – 2           | PEC | 3   | 0 | 0 | 3  |
|                    | Open Elective – 1                   | OEC | 3   | 0 | 0 | 3  |
| ISP2911            | Internship -2                       | P   | 0   | 0 | 4 | 2  |
| LABORATORY COURSES |                                     |     |     |   |   |    |
| 18EC2011           | Microcontrollers Laboratory         | PCC | 0   | 0 | 2 | 1  |
| 18EC2007           | Analog and Digital Communication    | PCC | 0   | 0 | 2 | 1  |
|                    | Laboratory                          |     | 0 0 |   | 1 |    |
|                    |                                     |     |     |   |   |    |
|                    | Total Credits                       |     |     |   |   | 22 |

SEMESTER 6

| Course Code        | Course Title                                 | Category | L | T | P | Credits |
|--------------------|--|----------|---|---|---|---------|
|                    | Professional Elective – 3                    | PEC      | 3 | 0 | 0 | 3       |
|                    | Professional Elective – 4                    | PEC      | 3 | 0 | 0 | 3       |
| 20EC2009           | Artificial Neural Networks and Deep Learning | PCC      | 2 | 0 | 0 | 2       |
| 20EC2008           | 5G Communications                            | PCC      | 3 | 0 | 0 | 3       |
| 23EC2014           | Control Systems                              | PCC      | 3 | 0 | 0 | 3       |
| 23EC2007           | VLSI Design                                  | PCC      | 3 | 0 | 0 | 3       |
| 23EC2009           | Principles and Design of IoT Systems         | PCC      | 3 | 0 | 0 | 3       |
| LABORATORY COURSES |  |          |   |   |   |         |
| 23EC2008           | VLSI Design Laboratory                       | PCC      | 0 | 0 | 2 | 1       |
| 23EC2010           | Embedded systems and IoT Laboratory          | PCC      | 0 | 0 | 2 | 1       |
|                    | Total Credits                                |          |   |   |   | 22*     |
|                    |  |          |   |   |   |         |

# \*Mandatory MOOC for 2 credits

## **SEMESTER 7**

| <b>Course Code</b> | Course Title                                      | Category | L | T | P | Credits |  |
|--------------------|---|----------|---|---|---|---------|--|
| 18EC2017           | Computer Network                                  | PCC      | 3 | 0 | 0 | 3       |  |
|                    | Professional Elective -5                          | PEC      | 3 | 0 | 0 | 3       |  |
|                    | Professional Elective -6                          | PEC      | 3 | 0 | 0 | 3       |  |
|                    | Professional Elective -7                          | PEC      | 3 | 0 | 0 | 3       |  |
|                    | Professional Elective -8                          | PEC      | 3 | 0 | 0 | 3       |  |
| 18EC2021           | Microwave and Optical Communication               | PCC      | 3 | 0 | 0 | 3       |  |
|                    | Open Elective – 2                                 | OEC      | 3 | 0 | 0 | 3       |  |
| LABORATORY COURSES |   |          |   |   |   |         |  |
| 22EC2011           | Microwave and Optical Communication<br>Laboratory | PCC      | 0 | 0 | 2 | 1       |  |
|                    |   |          |   |   |   |         |  |
|                    | Total Credits                                     |          |   |   |   | 22      |  |

### **SEMESTER 8**

| Course Code | Course Title              | Category | L | T | P  | Credits |
|-------------|---------------------------|----------|---|---|----|---------|
|             | Half Semester Project     |          |   |   |    |         |
|             | Professional Elective -9  | PEC      | 3 | 0 | 0  | 3       |
|             | Professional Elective -10 | PEC      | 3 | 0 | 0  | 3       |
| 23EC2998    | Project                   | P        | 0 | 0 | 16 | 8       |
|             | Full Semester Project     |          |   |   |    |         |
| 23EC2999    | Project                   | P        | 0 | 0 | 28 | 14      |
|             | Total Credit              |          |   |   |    | 14      |