

## SEMESTER-WISE PROGRAMME STRUCTURE OF (B.Tech.)

### UG Course Structure for Electronics Engineering (2018-2019)

| Cat.   | Deviation | Programme Components   | ECE        | Recommended (IV Years) |            |
|--------|-----------|--|------------|------------------------|------------|
|        |           |  |            | Min                    | Max        |
| HU     | 0         | Humanities and Social Science  | 22         | 22                     | 22         |
| IS     | 0         | Science  | 69         | 62                     | 84         |
| IE     | 0         | Institute Requirement Engineering/ Pharmacy  | 48         | 41                     | 60         |
| EP     | 0         | Engineering Drawing (Manual and Computer Aided), Manufacturing Practices and Practice course of Department/ School | 18         | 18                     | 24         |
| LM     | 0         | Language and Management  | 18         | 18                     | 24         |
| DC/ MC | 0         | Department/Programme Core (Includes Stream Courses)  | 164        | 105                    | 175        |
| DE/ BE | 0         | Department/Programme Elective (Includes Stream Courses)  | 45         | 30                     | 75         |
| OE     | 0         | Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)                                | 36         | 35                     | 80         |
| DP     | 0         | Project/ Industrial visit/ Training  | 30         | 20                     | 50         |
| DT     | 0         | Dissertation   | 0          | 0                      | 0          |
|        |           | <b>Total</b>   | <b>450</b> | <b>430</b>             | <b>460</b> |
|        |           | <b>All Semester Total (Hons.)</b>  | <b>470</b> | <b>450</b>             | <b>480</b> |

L: Lecture Hours, T: Tutorials Hours, P: Practical Or Laboratory Hours, C: Credits

### UG Course Structure for Electronics Engineering (2019-2020)

| Cat. | Deviation | Programme Components | ECE | Recommended (IV Years) |     |
|------|-----------|----------------------|-----|------------------------|-----|
|      |           |                      |     | Min                    | Max |
|      |           |                      |     |                        |     |

|        |   |  |            |            |            |
|--------|---|--|------------|------------|------------|
| HU     | 0 | Humanities and Social Science  | 22         | 41         | 50         |
| IS     | 0 | Science  | 69         | 62         | 84         |
| IE     | 0 | Institute Requirement Engineering/ Pharmacy  | 48         | 41         | 60         |
| EP     | 0 | Engineering Drawing (Manual and Computer Aided), Manufacturing Practices and Practice course of Department/ School | 18         | 18         | 24         |
| LM     | 0 | Language and Management  | 18         | 20         | 24         |
| DC/ MC | 0 | Department/Programme Core (Includes Stream Courses)  | 173        | 105        | 175        |
| DE/ BE | 0 | Department/Programme Elective (Includes Stream Courses)  | 45         | 30         | 60         |
| OE     | 0 | Open Elective (Interdisciplinary Stream courses from Science/ Engineering/Pharmacy)                                | 36         | 35         | 80         |
| DP     | 0 | Project/ Industrial visit/ Training  | 30         | 20         | 50         |
| DT     | 0 | Dissertation   | 0          | 0          | 0          |
|        |   | <b>Total</b>   | <b>459</b> | <b>430</b> | <b>460</b> |
|        |   | <b>All Semester Total (Hons.)</b>  | <b>479</b> | <b>450</b> | <b>480</b> |

L: Lecture Hours, T: Tutorials Hours, P: Practical Or Laboratory Hours, C: Credits

#### Areas in Electronics Engineering

| Streams | Streams Code | Subject                              |  |  |  |  |
|---------|--------------|--------------------------------------|--|--|--|--|
| CSE     | 1            | Communication Systems Engg           |  |  |  |  |
| DTI     | 2            | Digital Techniques & Instrumentation |  |  |  |  |
| ME      | 3            | Microelectronics                     |  |  |  |  |
| MW      | 4 & 5        | Microwave                            |  |  |  |  |
|         |              |                                      |  |  |  |  |

One course to be selected, for respective stream in corresponding semester, on recommendation of DUGC

#### Stream Electives in Electronics Engineering

| Stream               | Stream Code | Stream Title                                    | L | T | P | Credits |
|----------------------|-------------|---|---|---|---|---------|
|                      | <b>X1X</b>  | <b>Communication Systems Engineering</b>        |   |   |   |         |
| UG Pt. III(VI Sem.)  | EC 314      | Telecommunication Networks                      | 3 | 0 | 0 | 9       |
| UG Pt. IV(VII Sem.)  | EC 412      | Wireless Communication                          | 3 | 0 | 0 | 9       |
| UG Pt. IV(VIII Sem.) | EC 413      | Information Theory                              | 3 | 0 | 0 | 9       |
|                      | EC 414      | Modern Coding Theory                            | 3 | 0 | 0 | 9       |
|                      | EC 415      | Stochastic Processes                            | 3 | 0 | 0 | 9       |
|                      | <b>X2X</b>  | <b>Digital Techniques &amp; Instrumentation</b> |   |   |   |         |
| UG Pt. III(VI Sem.)  | EC 323      | Embedded System Design                          | 3 | 0 | 0 | 9       |
| UG Pt. IV(VII Sem.)  | EC 421      | Advanced Digital Design                         | 3 | 0 | 0 | 9       |
|                      | EC 422      | Artificial Intelligence                         | 3 | 0 | 0 | 9       |
|                      | EC423       | Internet of Things                              | 3 | 0 | 0 | 9       |
| UG Pt. IV(VIII Sem.) | EC 424      | Digital Image Processing                        | 3 | 0 | 0 | 9       |
|                      | EC 425      | Electronics System Design                       | 3 | 0 | 0 | 9       |
|                      | EC426       | Logical Design of Digital Systems               | 3 | 0 | 0 | 9       |
|                      | EC 427      | Switching Theory, Finite Machines & Automata    | 3 | 0 | 0 | 9       |
|                      | <b>X3X</b>  | <b>Microelectronics</b>                         |   |   |   |         |
| UG Pt. III(VI Sem.)  | EC 332      | Optoelectronic Devices                          | 3 | 0 | 0 | 9       |
| UG Pt. IV(VII Sem.)  | EC 432      | VLSI Technology                                 | 3 | 0 | 0 | 9       |
| UG Pt. IV(VIII Sem.) | EC 433      | Advanced Field Effect Devices                   | 3 | 0 | 0 | 9       |
|                      | EC 434      | Introduction to Nanoelectronics                 | 3 | 0 | 0 | 9       |

|                      | X4X    | Microwave                          |   |   |   |   |
|----------------------|--------|------------------------------------|---|---|---|---|
| UG Pt. III(VI Sem.)  | EC 343 | RF/Microwave Circuit Design        | 3 | 0 | 0 | 9 |
| UG Pt. IV(VII Sem.)  | EC 441 | Microwave Communication Systems    | 3 | 0 | 0 | 9 |
|                      | EC 442 | Microwave Integrated Circuits      | 3 | 0 | 0 | 9 |
|                      | EC 443 | RF/Microwave Measurements          | 3 | 0 | 0 | 9 |
|                      | EC 445 | Milimeter Wave Devices and Systems | 3 | 0 | 0 | 9 |
|                      | EC 449 | Applications of MW                 | 3 | 0 | 0 | 9 |
| UG Pt. IV(VIII Sem.) | EC 446 | Microwave Tubes                    | 3 | 0 | 0 | 9 |
|                      | EC 447 | Radar Engg.                        | 3 | 0 | 0 | 9 |
|                      | EC 448 | MW Solid State Devices             | 3 | 0 | 0 | 9 |

#### UG Course Structure for Electronics Engineering (2018-2019)

| UG-CRC Code   | Course Code | Course Name                                 | L-T-P    |          |          | Credits   |
|---|-------------|---|----------|----------|----------|-----------|
| <b>Electronics Engineering : 4-Year B.Tech I-Semester</b> |             |   |          |          |          |           |
| IH.H101.16  | H 101       | Universal Human Values - I: Self and Family | 2        | 0        | 0        | 6         |
| GY.PE101.16   | PE 101      | Elementary Physical Education               | 0        | 1        | 3        | 5         |
| GY.CP101.16   | CP 101      | Creative Practices #                        | 0        | 1        | 3        | 5         |
|   |             | <b>Total</b>                                | <b>2</b> | <b>2</b> | <b>6</b> | <b>16</b> |
| LM.HL101.16   | HL 101      | Basic English*                              | 2        | 0        | 1        | 7         |
|   |             | <b>Total</b>                                | <b>4</b> | <b>2</b> | <b>7</b> | <b>23</b> |

#Creative Practices course to be announced by Dean Academic Office

\*Basic English course to be taken by student as recommended after Diagnostic Test

#### Electronics Engineering : 4-Year B.Tech I-Semester

|              |         |   |   |   |   |    |
|--------------|---------|---|---|---|---|----|
| IS.PHY102.16 | PHY 102 | Physics-II Introduction to Engineering Electromagnetics | 3 | 1 | 2 | 13 |
|--------------|---------|---|---|---|---|----|

|              |         |                           |           |          |           |           |
|--------------|---------|---------------------------|-----------|----------|-----------|-----------|
| IS.CY101.16  | CY 101  | Chemistry-I               | 2         | 1        | 2         | 10        |
| IS.MA101.16  | MA 101  | Engineering Mathematics-I | 3         | 1        | 0         | 11        |
| IE.CSO101.16 | CSO 101 | Computer Programming      | 3         | 1        | 2         | 13        |
| EP.ME106.16  | ME 106  | Manufacturing Practice-II | 0         | 0        | 3         | 3         |
| EP.ME104.16  | ME 104  | Engineering Drawing       | 1         | 0        | 3         | 6         |
|              |         | <b>Total</b>              | <b>12</b> | <b>4</b> | <b>12</b> | <b>56</b> |

**Electronics Engineering : 4-Year B.Tech II-Semester**

|               |         |   |           |          |          |           |
|---------------|---------|---|-----------|----------|----------|-----------|
| IS.PHY 101.16 | PHY 101 | Physics-I: Classical,Quantum & Relativistic Mechanics | 3         | 1        | 2        | 13        |
| IS.MA 102.16  | MA 102  | Engineering Mathematics- II                           | 3         | 1        | 0        | 11        |
| IE.EO 101.16  | EO 101  | Fundamentals of Electrical Engineering                | 3         | 1        | 2        | 13        |
| MC.CSO.102.19 | CSO 102 | Data Structures*                                      | 3         | 0        | 2        | 11        |
| DC.EC.203.19  | EC 203  | Electromagnetic Fields and Transmission Lines \$      | 3         | 0        | 0        | 9         |
| EP.EC.102.16  | EC 102  | Electronic Circuit Workshop                           | 1         | 0        | 3        | 6         |
| IH.H 105.16   | H 105   | Philosophy #  | 2         | 1        | 0        | 8         |
| IH.H 106.16   | H 106   | Education & Self #                                    |           |          |          |           |
|               |         | <b>Total</b>  | <b>18</b> | <b>4</b> | <b>9</b> | <b>60</b> |

#The students have to choose one course from H105 & H106.

\$ Only for 2018-2019 Batch; \*From 2019-20

**Electronics Engineering : 4-Year B.Tech III-Semester**

|              |        |                            |   |   |   |    |
|--------------|--------|----------------------------|---|---|---|----|
| IS.MA 202.16 | MA 202 | Probability and Statistics | 3 | 1 | 0 | 11 |
|--------------|--------|----------------------------|---|---|---|----|

|                  |        |                                    |           |          |          |           |
|------------------|--------|------------------------------------|-----------|----------|----------|-----------|
| IE.MO<br>201.16  | MO201  | Materials Science                  | 3         | 1        | 0        | 11        |
| MC.EO<br>201.16  | EO 201 | Network Analysis & Synthesis       | 3         | 1        | 2        | 13        |
| DC.EC.<br>201.19 | EC 201 | Solid State Electronic Devices     | 3         | 0        | 0        | 9         |
| DC.EC.<br>202.16 | EC 202 | Signals and Systems                | 3         | 0        | 0        | 9         |
| DC.EC.<br>271.19 | EC 271 | Solid State Electronic Devices Lab | 0         | 0        | 2        | 2         |
| IH.H 103.16      | H 103  | Development of Societies #         | 2         | 1        | 0        | 8         |
| IH.H 104.16      | H 104  | History and Civilization #         |           |          |          |           |
|                  |        | <b>Total</b>                       | <b>17</b> | <b>4</b> | <b>4</b> | <b>63</b> |

#The Students have to choose one course from H103 & H104.

#### Electronics Engineering : 4-Year B.Tech IV-Semester

|                  |        |  |   |   |   |    |
|------------------|--------|--|---|---|---|----|
| IE.ME.101.1<br>6 | ME 101 | Fundamentals of Mechanical Engineering             | 3 | 1 | 0 | 11 |
| MC.EO.<br>202.16 | EO 202 | Analogue Circuits and Systems                      | 3 | 0 | 0 | 9  |
| MC.EO.<br>203.19 | EO 203 | Digital Circuits and Systems                       | 3 | 0 | 0 | 9  |
| DC.EC.<br>211.16 | EC 211 | Analogue Communication Systems                     | 3 | 0 | 0 | 9  |
| EP.ME.105.<br>16 | ME 105 | Manufacturing Practice – I                         | 0 | 0 | 3 | 3  |
| DP.EC<br>291.16  | EC 291 | Exploratory Project                                | 0 | 0 | 5 | 5  |
| DC.EC.203.<br>19 | EC 203 | Electromagnetic Fields and Transmission Lines \$\$ | 3 | 0 | 0 | 9  |
| DC.EO<br>272.19  | EO 272 | Analogue Circuits and Systems Lab                  | 0 | 0 | 2 | 2  |
| DC.EO<br>273.19  | EC 273 | Digital Circuits & Systems Lab                     | 0 | 0 | 2 | 2  |
| DC.EC.<br>274.19 | EC 274 | Analogue Communication Systems Lab                 | 0 | 0 | 2 | 2  |

|  |  |  |              |          |          |          |           |           |
|--|--|--|--------------|----------|----------|----------|-----------|-----------|
|  |  |  | <b>Total</b> | <b>1</b> | <b>5</b> | <b>1</b> | <b>14</b> | <b>61</b> |
|--|--|--|--------------|----------|----------|----------|-----------|-----------|

\$\$ From 2019-20 Batch

|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|
|  |  |  |  |  |  |  |  |  |
|--|--|--|--|--|--|--|--|--|

**Electronics Engineering : 4-Year B.Tech V-Semester**

|                  |        |                                |          |          |          |           |
|------------------|--------|--------------------------------|----------|----------|----------|-----------|
| DC.EC.341.<br>19 | EC 341 | Antennas and Propagation       | 3        | 0        | 0        | 9         |
| DC.EC.331.<br>16 | EC 331 | Microelectronics               | 3        | 0        | 0        | 9         |
| DC.EC.311.<br>16 | EC 311 | Digital Communication          | 3        | 0        | 0        | 9         |
| OE - 1           | OE - 1 | Open Elective - 1              | 3        | 0        | 0        | 9         |
| DC.EC.321.<br>19 | EC 321 | Microprocessor Engineering     | 3        | 0        | 0        | 9         |
| DC.EC.371.<br>19 | EC 371 | Antennas and Propagation Lab   | 0        | 0        | 2        | 2         |
| DC.EC.372.<br>19 | EC 372 | Digital Communication Lab      | 0        | 0        | 2        | 2         |
| DC.EC.373.<br>19 | EC 373 | Microprocessor Engineering Lab | 0        | 0        | 2        | 2         |
|                  |        | <b>Total</b>                   | <b>1</b> | <b>5</b> | <b>0</b> | <b>6</b>  |
| DP.EC391S<br>.16 | EC391S | Stream Project (Hons.)         | 0        | 0        | 10       | 10        |
|                  |        | <b>Total (Hons. Students)</b>  | <b>1</b> | <b>5</b> | <b>0</b> | <b>16</b> |

**Electronics Engineering: 4-Year B.Tech VI-Semester**

|                    |                   |                           |   |   |    |    |
|--------------------|-------------------|---------------------------|---|---|----|----|
| DC.EC.313.<br>16   | EC 313            | Digital Signal Processing | 3 | 0 | 0  | 9  |
| DC.EC.342.<br>19   | EC 342            | Microwave Engineering     | 3 | 0 | 0  | 9  |
| DP.EC.392/<br>S.16 | EC 392/<br>EC392S | Stream or UG Project      | 0 | 0 | 10 | 10 |

|                  |        |   |           |          |           |           |
|------------------|--------|---|-----------|----------|-----------|-----------|
| DE - 1           | DE - 1 | Department Elective (DE) - 1                | 3         | 0        | 0         | 9         |
| OE - 2           | OE - 2 | Open Elective - 2                           | 3         | 0        | 0         | 9         |
| DC.EC.322.<br>19 | EC 322 | Electronics Measurement and Instrumentation | 3         | 0        | 0         | 9         |
|                  |        | <b>Total</b>                                | <b>15</b> | <b>0</b> | <b>10</b> | <b>55</b> |

#### Department Elective-1

|                  |        |                             |   |   |   |   |
|------------------|--------|-----------------------------|---|---|---|---|
| DE.EC.314.<br>16 | EC 314 | Telecommunication Networks  | 3 | 0 | 0 | 9 |
| DE.EC.323.<br>16 | EC 323 | Embedded System Design      | 3 | 0 | 0 | 9 |
| DE.EC.332.<br>16 | EC 332 | Optoelectronic Devices      | 3 | 0 | 0 | 9 |
| DE.EC.343.<br>16 | EC 343 | RF/Microwave Circuit Design | 3 | 0 | 0 | 9 |

#### Electronics Engineering: 4-Year B.Tech. Summer Term

|                 |        |                                    |          |          |          |          |
|-----------------|--------|------------------------------------|----------|----------|----------|----------|
| DP.EC393.1<br>6 | EC 393 | Industrial Training/Summer Project | 0        | 0        | 5        | 5        |
|                 |        | <b>Total</b>                       | <b>0</b> | <b>0</b> | <b>5</b> | <b>5</b> |

#### Electronics Engineering : 4-Year B.Tech VII-Semester

|                   |                   |                             |   |   |    |    |
|-------------------|-------------------|-----------------------------|---|---|----|----|
| DC.EC.411.<br>19  | EC 411            | Optical Communication       | 3 | 0 | 0  | 9  |
| DC.EC.431.<br>16  | EC 431            | Basic VLSI Design           | 3 | 0 | 0  | 9  |
| DE - 2            | DE - 2            | Department Elective (DE) -2 | 3 | 0 | 0  | 9  |
| OE - 3            | OE - 3            | Open Elective - 3           | 3 | 0 | 0  | 9  |
| DP.EC491/<br>S.16 | EE 491/<br>EE491S | Stream or UG Project        | 0 | 0 | 10 | 10 |



|                  |        |                               |           |          |           |           |
|------------------|--------|-------------------------------|-----------|----------|-----------|-----------|
| DC.EC.374.<br>19 | EC 374 | Microwave Engineering Lab     | 0         | 0        | 2         | 2         |
| LM               | LM     | Language & Management Courses | 3         | 0        | 0         | 9         |
|                  |        | <b>Total</b>                  | <b>15</b> | <b>0</b> | <b>12</b> | <b>57</b> |

#### Department Elective-2

|                  |        |                                      |   |   |   |   |
|------------------|--------|--------------------------------------|---|---|---|---|
| DE.EC.412.<br>19 | EC 412 | Wireless Communication               | 3 | 0 | 0 | 9 |
| DE.EC.421.<br>19 | EC 421 | Advanced Digital Design              | 3 | 0 | 0 | 9 |
| DE.EC.422.<br>19 | EC 422 | Artificial Intelligence              | 3 | 0 | 0 | 9 |
| DE.EC.423.<br>19 | EC 423 | Internet of Things                   | 3 | 0 | 0 | 9 |
| DE.EC.432.<br>19 | EC 432 | VLSI Technology                      | 3 | 0 | 0 | 9 |
| DE.EC.441.<br>19 | EC 441 | Microwave Communication Systems      | 3 | 0 | 0 | 9 |
| DE.EC.442.<br>19 | EC 442 | Microwave Integrated Circuits        | 3 | 0 | 0 | 9 |
| DE.EC.443.<br>19 | EC 443 | RF/Microwave Measurements            | 3 | 0 | 0 | 9 |
| DE.EC.449.<br>19 | EC 449 | Applications of Microwave            | 3 | 0 | 0 | 9 |
| DE.EC.445.<br>19 | EC 445 | Milli-meter Wave Devices and Systems | 3 | 0 | 0 | 9 |

#### Electronics Engineering : 4-Year B.Tech VIII-Semester

|        |        |                              |   |   |   |   |
|--------|--------|------------------------------|---|---|---|---|
| DE - 3 | DE - 3 | Department Elective (DE) - 3 | 3 | 0 | 0 | 9 |
| DE - 4 | DE - 4 | Department Elective (DE) - 4 | 3 | 0 | 0 | 9 |
| DE - 5 | DE - 5 | Department Elective (DE) - 5 | 3 | 0 | 0 | 9 |
| OE - 4 | OE - 4 | Open Elective - 4            | 3 | 0 | 0 | 9 |

|              |        |                               |           |          |          |           |
|--------------|--------|-------------------------------|-----------|----------|----------|-----------|
| LM           | LM     | Language & Management Courses | 3         | 0        | 0        | 9         |
|              |        | <b>Total</b>                  | <b>15</b> | <b>0</b> | <b>0</b> | <b>45</b> |
| DP.EC.493.16 | EC 493 | Stream Project (Hons.)        | 0         | 0        | 10       | 10        |
|              |        | <b>Total (Hons. Students)</b> | <b>15</b> | <b>0</b> | <b>0</b> | <b>55</b> |

#### Department Elective - 3, 4 & 5

|              |        |  |   |   |   |   |
|--------------|--------|--|---|---|---|---|
| DE.EC.413.19 | EC 413 | Information Theory                             | 3 | 0 | 0 | 9 |
| DE.EC.414.19 | EC 414 | Modern Coding Theory                           | 3 | 0 | 0 | 9 |
| DE.EC.415.19 | EC 415 | Stochastic Processes                           | 3 | 0 | 0 | 9 |
| DE.EC.424.19 | EC 424 | Digital Image Processing                       | 3 | 0 | 0 | 9 |
| DE.EC.425.19 | EC 425 | Electronics System Design                      | 3 | 0 | 0 | 9 |
| DE.EC.426.19 | EC 426 | Logical Design of Digital Systems              | 3 | 0 | 0 | 9 |
| DE.EC.427.19 | EC 427 | Switching Theory, Finite Machines and Automata | 3 | 0 | 0 | 9 |
| DE.EC.433.19 | EC 433 | Advanced Field Effect Devices                  | 3 | 0 | 0 | 9 |
| DE.EC.434.19 | EC 434 | Introduction to Nanoelectronics                | 3 | 0 | 0 | 9 |
| DE.EC.446.19 | EC 446 | Microwave Tubes                                | 3 | 0 | 0 | 9 |
| DE.EC.447.19 | EC 447 | Radar Engineering                              | 3 | 0 | 0 | 9 |
| DE.EC.448.19 | EC 448 | Microwave Solid State Devices                  | 3 | 0 | 0 | 9 |

L: Lecture hours; T: Tutorial hours; P: Laboratory/ Practical hours; C: Credits

**Open Elective - 1 (for other departments)**

|                  |        |                                |   |   |   |   |
|------------------|--------|--------------------------------|---|---|---|---|
| OE.EC.314.<br>19 | EC 314 | Optical Communication Networks | 3 | 0 | 0 | 9 |
|------------------|--------|--------------------------------|---|---|---|---|