



P.S.R. ENGINEERING COLLEGE
 (An Autonomous Institution & ISO 9001: 2008 certified Institution)
 Sevalpatti – 626140, Sivakasi
 Virudhunagar District, Tamilnadu



| | | |
|-----------------------|---|----------|
| 7.1.15 | | |
| Q_nM | <i>The institution offers a course on Human Values and professional ethics.</i> | 1 |
| | <i>Yes</i> | |

**B.TECH. BIOTECHNOLOGY
 CURRICULUM**

Full time candidates admitted during 2016-2017 and onwards

| S.No | Course Code | Course Title (with category) | Category | Pre-requisite | Credits | | | |
|---------------------|-------------|------------------------------------|----------|---------------|-----------|----------|----------|-----------|
| | | | | | L | T | P | C |
| SEMESTER – I | | | | | | | | |
| Theory | | | | | | | | |
| 1 | 161HS11 | Essential English | HS | | 3 | 0 | 0 | 3 |
| 2 | 161MA11 | Engineering Mathematics - I | BS | | 3 | 1 | 0 | 4 |
| 3 | 161PH11 | Engineering Physics | BS | | 3 | 0 | 0 | 3 |
| 4 | 161CY11 | Engineering Chemistry | BS | | 3 | 0 | 0 | 3 |
| 5 | 161CS11 | Computer Programming | ES | | 3 | 0 | 0 | 3 |
| 6 | 161ME11 | Engineering Graphics | ES | | 3 | 0 | 0 | 3 |
| Practicals | | | | | | | | |
| 7 | 161PC17 | Physics and Chemistry Laboratory-I | BS | | 0 | 0 | 3 | 2 |
| 8 | 161CS17 | Computer Practices Laboratory | ES | | 0 | 0 | 3 | 2 |
| 9 | 161EE17 | Engineering Practices Laboratory | ES | | 0 | 0 | 3 | 2 |
| Total | | | | | 18 | 3 | 9 | 25 |

| S.No | Course Code | Course Title | Category | Pre-requisite | Credits | | | |
|----------------------|-------------|-------------------------------------|----------|---------------|---------|---|---|---|
| | | | | | L | T | P | C |
| SEMESTER – II | | | | | | | | |
| Theory | | | | | | | | |
| 1 | 161HS21 | Technical English | HS | | 3 | 0 | 0 | 3 |
| 2 | 161MA21 | Engineering Mathematics - II | BS | | 3 | 1 | 0 | 4 |
| 3 | 161PH21 | Physics of Materials | BS | | 3 | 0 | 0 | 3 |
| 4 | 161CY21 | Environmental Science | BS | | 3 | 0 | 0 | 3 |
| 5 | 161BT21 | Biochemistry – I | ES | | 3 | 0 | 0 | 3 |
| 6 | 161BT22 | Microbiology | ES | | 3 | 0 | 0 | 3 |
| Practicals | | | | | | | | |
| 7 | 161PC27 | Physics and Chemistry Laboratory–II | BS | | 0 | 0 | 3 | 2 |
| 8 | 161BT27 | Biochemistry Laboratory | ES | | 0 | 0 | 3 | 2 |
| 9 | 161BT28 | Microbiology Laboratory | ES | | 0 | 0 | 3 | 2 |

| | | | | | |
|--------------|--|-----------|----------|----------|-----------|
| Total | | 18 | 2 | 9 | 25 |
|--------------|--|-----------|----------|----------|-----------|

SEMESTER III

| S.No. | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|-------------------|---------|---|----------|---------------|----|---|---|----|
| THEORY | | | | | | | | |
| 1 | 161MA31 | Transforms and Partial Differential Equations | BS | | 3 | 1 | 0 | 4 |
| 2 | 161BT31 | Stoichiometry and Fluid Mechanics | PC | | 3 | 0 | 0 | 3 |
| 3 | 161BT32 | Cell Biology | PC | | 3 | 0 | 0 | 3 |
| 4 | 161BT33 | Principles of Genetics | PC | | 3 | 0 | 0 | 3 |
| 5 | 161BT34 | Enzyme Technology | PC | | 3 | 0 | 0 | 3 |
| 6 | 161BT35 | Biochemistry–II | PC | | 3 | 0 | 0 | 3 |
| PRACTICALS | | | | | | | | |
| 7 | 161BT37 | Cell Biology Laboratory | PC | | 0 | 0 | 3 | 2 |
| 8 | 161BT38 | Bio organic Chemistry Laboratory | PC | | 0 | 0 | 3 | 2 |
| 9 | 161HS39 | Functional English I | MC | | 0 | 0 | 2 | - |
| Total | | | | | 18 | 1 | 8 | 23 |

SEMESTER - IV

| S.No | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|-------------------|---------|---|----------|---------------|----|---|---|----|
| THEORY | | | | | | | | |
| 1 | 161MA42 | Statistics and Numerical Methods | BS | | 3 | 0 | 0 | 3 |
| 2 | 161BT41 | Molecular Biology | PC | | 3 | 0 | 0 | 3 |
| 3 | 161BT42 | Unit Operations | PC | | 3 | 1 | 0 | 4 |
| 4 | 161BT43 | Chemical Engineering Thermodynamics | PC | | 3 | 0 | 0 | 3 |
| 5 | 161BT44 | Analytical Methods in Biotechnology | PC | | 3 | 0 | 0 | 3 |
| 6 | 161BT45 | Basic Industrial Biotechnology | PC | | 3 | 0 | 0 | 3 |
| PRACTICALS | | | | | | | | |
| 7 | 161BT47 | Analytical Methods in Biotechnology Lab | PC | | 0 | 0 | 3 | 2 |
| 8 | 161BT48 | Chemical Engineering Lab | PC | | 0 | 0 | 3 | 2 |
| 9 | 161HS49 | Functional English II | MC | | 0 | 0 | 2 | - |
| Total | | | | | 18 | 0 | 8 | 23 |

SEMESTER - V

| S.No | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|-------------------|---------|--------------------------|----------|---------------|----|---|---|----|
| THEORY | | | | | | | | |
| 1 | 161BT51 | Bioprocess Principles | PC | | 3 | 0 | 0 | 3 |
| 2 | 161BT52 | Bioinformatics | PC | | 3 | 0 | 0 | 3 |
| 3 | 161BT53 | Mass Transfer operations | PC | | 3 | 0 | 0 | 3 |
| 4 | 161BT54 | Plant Biotechnology | PC | | 3 | 0 | 0 | 3 |
| 5 | 161BT55 | Protein Engineering | PC | | 3 | 0 | 0 | 3 |
| 6 | 161BT56 | Bioethics | PC | | 3 | 0 | 0 | 3 |
| PRACTICALS | | | | | | | | |
| 7 | 161BT57 | Molecular Biology Lab | PC | | 0 | 0 | 3 | 2 |
| 8 | 161BT58 | Bioinformatics Lab | PC | | 0 | 0 | 3 | 2 |
| 9 | 161HS59 | Career English I | MC | | 0 | 0 | 2 | - |
| Total | | | | | 18 | 0 | 8 | 22 |

SEMESTER - VI

| S.No | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|-------------------|---------|--------------------------------------|----------|---------------|----|---|----|----|
| THEORY | | | | | | | | |
| 1 | 161BT61 | Chemical Reaction Engineering | PC | | 3 | 1 | 0 | 4 |
| 2 | 161BT62 | Immunology | PC | | 3 | | 0 | 3 |
| 3 | 161BT63 | Genetic Engineering | PC | | 3 | | 0 | 3 |
| 4 | 161HS61 | Engineering economics and management | HS | | 3 | | 0 | 3 |
| 5 | | Elective1 | PE | | 3 | | 0 | 3 |
| 6 | | Elective2 | OE/PE | | 3 | | 0 | 3 |
| PRACTICALS | | | | | | | | |
| 7 | 161BT67 | Genetic Engineering Laboratory | PC | | | | 4 | 2 |
| 8 | 161BT68 | Immunology Lab | PC | | | | 4 | 2 |
| 9 | 161HS69 | Career English I | MC | | | | 2 | - |
| | | Total | | | 18 | 0 | 10 | 23 |

SEMESTER VII

| S.No | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|-------------------|---------|---------------------------|----------|---------------|---|---|---|----|
| THEORY | | | | | | | | |
| 1 | 161BT71 | Bioprocess Engineering | PC | | 3 | 1 | 0 | 4 |
| 2 | 161BT72 | Downstream processing | PC | | 3 | 0 | 0 | 3 |
| 3 | 161BT73 | Proteomics and genomic | PC | | 3 | 0 | 0 | 3 |
| 4 | 161BT74 | Nano biotechnology | PC | | 3 | 0 | 0 | 3 |
| 5 | | Elective1 | PE | | 3 | 0 | 0 | 3 |
| 6 | | Elective 2 | OE/PE | | 3 | 0 | 0 | 3 |
| PRACTICALS | | | | | | | | |
| 7 | 161BT77 | Bioprocess Lab | PC | | 0 | 0 | 4 | 2 |
| 8 | 161BT78 | Downstream processing Lab | PC | | 0 | 0 | 4 | 2 |
| | | Total | | | 1 | 0 | 8 | 23 |

SEMESTER VIII

| S.No. | CODE | COURSE TITLE | Category | Pre-requisite | L | T | P | C |
|------------------|----------|--------------|----------|---------------|---|---|----|----|
| 1 | | Elective1 | PE | | 3 | 0 | 0 | 3 |
| 2 | | Elective 2 | PE | | 3 | 0 | 0 | 3 |
| PRACTICAL | | | | | | | | |
| 3 | 161BT831 | Project Work | EEC | | 0 | 0 | 12 | 6 |
| | | Total | | | 6 | 0 | 12 | 12 |

LIST OF ELECTIVES

| CODENO. | COURSE | L | T | P | C |
|----------|--|---|---|---|---|
| 161BTE01 | Biophysics | 3 | 0 | 0 | 3 |
| 161BTE02 | Biological Spectroscopy | 3 | 0 | 0 | 3 |
| 161BTE03 | Developmental Biology | 3 | 0 | 0 | 3 |
| 161BTE04 | Biopharmaceutical Technology | 3 | 0 | 0 | 3 |
| 161BTE05 | Principles of Food Processing | 3 | 0 | 0 | 3 |
| 161BTE06 | Marine Biotechnology | 3 | 0 | 0 | 3 |
| 161BTE07 | Animal Biotechnology | 3 | 0 | 0 | 3 |
| 161BTE08 | Cancer Biology | 3 | 0 | 0 | 3 |
| 161BTE09 | Bioconjugate Technology | 3 | 0 | 0 | 3 |
| 161BTE10 | Stem Cell Technology | 3 | 0 | 0 | 3 |
| 161BTE11 | Molecular Pathogenesis | 3 | 0 | 0 | 3 |
| 161BTE12 | Molecular Modeling & Drug Design | 3 | 0 | 0 | 3 |
| 161BTE13 | Metabolic Engineering | 3 | 0 | 0 | 3 |
| 161BTE14 | Immunotechnology | 3 | 0 | 0 | 3 |
| 161BTE15 | Neurobiology and Cognitive Sciences | 3 | 0 | 0 | 3 |
| 161BTE16 | Process Instrumentation Dynamics and Control | 3 | 0 | 0 | 3 |

| S. No. | Course Code | OPEN ELECTIVES OFFERED BY CSE DEPARTMENT | Category | L-T-P | Credit |
|--------|-------------|--|----------|-------|--------|
| 1 | 161OE101 | Web development using PHP | OE | 3-0-0 | 3 |
| 2 | 161OE102 | Programming in PERL | OE | 3-0-0 | 3 |
| 3 | 161OE103 | Multimedia & Animation Tools | OE | 3-0-0 | 3 |
| 4 | 161OE104 | Multicore Architecture | OE | 3-0-3 | 3 |
| 5 | 161OE105 | Green Computing | OE | 3-0-3 | 3 |
| 6 | 161OE106 | Soft Computing | OE | 3-0-3 | 3 |
| 7 | 161OE107 | Java Scripts | OE | 3-0-3 | 3 |

OPEN ELECTIVES OFFERED BY ECE

| Sl. | Code | Course Title | Category | L-T-P | C |
|-----|----------|--|----------|-------|---|
| 1 | 161OE201 | Bio Medical Instrumentation | OE | 3-0-0 | 3 |
| 2 | 161OE202 | Digital Image Processing | OE | 3-0-0 | 3 |
| 3 | 161OE203 | Consumer Electronics | OE | 3-0-0 | 3 |
| 4 | 161OE204 | Multimedia Compression and Communication | OE | 3-0-0 | 3 |
| 5 | 161OE205 | High Speed Networks | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY EEE

| Sl. | Code | Course Title | Category | L-T-P | C |
|-----|----------|---|----------|-------|---|
| 1 | 161OE401 | Energy audit and conservation | OE | 3-0-0 | 3 |
| 2 | 161OE402 | Principles of Virtual Instrumentation | OE | 3-0-0 | 3 |
| 3 | 161OE403 | Sensors and Transducers | OE | 3-0-0 | 3 |
| 4 | 161OE404 | Aircraft electronic system | OE | 3-0-0 | 3 |
| 5 | 161OE405 | Electrical safety | OE | 3-0-0 | 3 |
| 6 | 161OE406 | Vehicle electric power Systems | OE | 3-0-0 | 3 |
| 7 | 161OE407 | Domestic and Industrial Electrical Installation | OE | 3-0-0 | 3 |

| CODENO. | OPEN ELECTIVES OFFERED BY BIOTECHNOLOGY DEPARTMENT | Category | L | T | P | C |
|----------------|---|-----------------|----------|----------|----------|----------|
| 161OE501 | Process Equipment and Plant Design | OE | 3 | 0 | 0 | 3 |
| 161OE502 | Biomaterials | OE | 3 | 0 | 0 | 3 |
| 161OE503 | Biosensors | OE | 3 | 0 | 0 | 3 |
| 161OE504 | Food Science and Technology | OE | 3 | 0 | 0 | 3 |

Open Electives – Offered by Department of Mechanical Engineering

| Sl.No. | Code | Course Title | Category | L-T-P | C |
|---------------|-------------|---------------------------------------|-----------------|--------------|----------|
| 1 | 161OE601 | Maintenance Engineering | OE | 3-0-0 | 3 |
| 2 | 161OE602 | Non Destructive Testing and Materials | OE | 3-0-0 | 3 |
| 3 | 161OE603 | Operations Research | OE | 3-0-0 | 3 |
| 4 | 161OE604 | Renewable Sources of Energy | OE | 3-0-0 | 3 |
| 5 | 161OE605 | Robotics | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY CIVIL ENGG DEPARTMENT

| | | | | | |
|----|----------|--|----------|-------|---|
| 1. | 161OE701 | Disaster Management System | Category | 3-0-0 | 3 |
| 2. | 161OE702 | Fundamentals of Fire Safety Engineering | OE | 3-0-0 | 3 |
| 3. | 161OE703 | Optimization in Engineering | OE | 3-0-0 | 3 |
| 4. | 161OE704 | Renewable Energy Sources | OE | 3-0-0 | 3 |
| 5. | 161OE705 | Environmental Impact and Risk Assessment | OE | 3-0-0 | 3 |
| 6. | 161OE706 | Environment and Ecology | OE | 3-0-0 | 3 |
| 7. | 161OE707 | Technology Management | OE | 3-0-0 | 3 |
| 8. | 161OE708 | Sustainable Management of Urban Ecology | OE | 3-0-0 | 3 |

LIST OF OPEN ELECTIVES OFFERED BY MBA DEPARTMENT

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|---------------|-----------------|------------------------------------|-----------------|--------------|----------|
| 1 | 161OE801 | Essentials of Management | OE | 3-0-0 | 3 |
| 2 | 161OE802 | Fundamentals of Marketing | OE | 3-0-0 | 3 |
| 3 | 161OE803 | Managing Human Resources | OE | 3-0-0 | 3 |
| 4 | 161OE804 | Professional Ethics in Engineering | OE | 3-0-0 | 3 |

UG REGULATION-2016
“B.E. CIVIL ENGINEERING CURRICULUM
SEMESTER I

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|------------------------------------|----------|-------|---|---------------------------|
| Theory | | | | | | |
| 1 | 161HS11 | Essential English | HS | 3-0-0 | 3 | -- |
| 2 | 161MA11 | Engineering Mathematics – I | BS | 3-1-0 | 4 | -- |
| 3 | 161PH11 | Engineering Physics | BS | 3-0-0 | 3 | -- |
| 4 | 161CY11 | Engineering Chemistry | BS | 3-0-0 | 3 | -- |
| 5 | 161CS11 | Computer Programming | ES | 3-0-0 | 3 | -- |
| 6 | 161ME11 | Engineering Graphics | ES | 1-0-3 | 3 | -- |
| Practical | | | | | | |
| 7 | 161PC17 | Physics and Chemistry Laboratory-I | BS | 0-0-3 | 2 | -- |
| 8 | 161CS17 | Computer Practices Laboratory | ES | 0-0-3 | 2 | -- |
| 9 | 161EE17 | Engineering Practices Laboratory | ES | 0-0-3 | 2 | -- |
| | | | | | | Total Credits - 25 |

SEMESTER II

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|-------------------------------------|----------|-------|---|---------------------------|
| Theory | | | | | | |
| 1 | 161HS21 | Technical English | HS | 3-0-0 | 3 | 161HS11 |
| 2 | 161MA21 | Engineering Mathematics – II | BS | 3-1-0 | 4 | 161MA11 |
| 3 | 161PH21 | Physics of Materials | BS | 3-0-0 | 3 | 161PH11 |
| 4 | 161CY21 | Environmental Science | BS | 3-0-0 | 3 | -- |
| 5 | 161ME21 | Engineering Mechanics | ES | 3-0-0 | 3 | -- |
| 6 | 161CE21 | Building Materials | ES | 3-0-0 | 3 | -- |
| Practical | | | | | | |
| 7 | 161PC27 | Physics and Chemistry Laboratory-II | BS | 0-0-3 | 2 | 161PH11, 161CY11 |
| 8 | 161CE28 | Computer Aided Drafting Laboratory | ES | 0-0-3 | 2 | 161ME11 |
| | | | | | | Total Credits – 23 |

SEMESTER - III

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|---|----------|-------|---------------------------|---------------------|
| Theory | | | | | | |
| 1. | 161MA31 | Transforms and Partial Differential Equations | BS | 4-0-0 | 4 | 161MA11, 161MA22 |
| 2. | 161CE31 | Mechanics of Solids - I | PC | 4-0-0 | 4 | 161ME21 |
| 3. | 161CE32 | Mechanics of Fluids | ES | 2-2-0 | 3 | -- |
| 4. | 161CE33 | Surveying | PC | 3-0-0 | 3 | -- |
| 5. | 161CE34 | Geology for Civil Engineering | ES | 3-0-0 | 3 | -- |
| 6. | 161CE35 | Concrete Technology | PC | 3-0-0 | 3 | 161CE21 |
| Practical | | | | | | |
| 7. | 161CE37 | Survey Practical | PC | 0-0-3 | 2 | 161CE33 |
| 8. | 161CE38 | Hydraulic Engineering Laboratory | ES | 0-0-3 | 2 | -- |
| 9. | 161HS39 | <u>Functional English - I</u> * | EEC | 0-0-3 | - | 161HS21 |
| | | | | | Total Credits – 24 | |

SEMESTER – IV

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|----------------------------------|----------|-------|---------------------------|---------------------|
| Theory | | | | | | |
| 1. | 161MA42 | Numerical Methods | BS | 3-0-0 | 3 | 161MA31 |
| 2. | 161CE41 | Mechanics of Solids -II | PC | 4-0-0 | 4 | 161CE31 |
| 3. | 161CE42 | Applied Hydraulic Engineering | PC | 2-2-0 | 3 | 161CE32 |
| 4. | 161CE43 | Mechanics of Soils | PC | 3-0-0 | 3 | -- |
| 5. | 161CE44 | Construction Technology | ES | 3-0-0 | 3 | 161CE35 |
| 6. | 161CE45 | Water Supply Engineering | PC | 3-0-0 | 3 | -- |
| Practical | | | | | | |
| 7. | 161CE47 | Strength of Materials Laboratory | PC | 0-0-3 | 2 | 161CE31, 161CE41 |
| 8. | 161CE48 | Survey Camp | PC | 0-0-3 | 2 | 161CE33, 161CE37 |
| 9. | 161HS49 | <u>Functional English - II</u> * | EEC | 0-0-1 | - | 161HS21 |
| | | | | | Total Credits – 23 | |

* - Mandatory Non-credit Course

SEMESTER - V

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|--------------------------------------|----------|-------|---------------------------|---------------|
| Theory | | | | | | |
| 1. | 161CE51 | Structural Analysis - I | PC | 4-0-0 | 4 | -- |
| 2. | 161CE52 | Irrigation Engineering | PC | 3-0-0 | 3 | 161CE42 |
| 3. | 161CE53 | Sanitary Engineering | PC | 3-0-0 | 3 | 161CE45 |
| 4. | 161CE54 | Highway Engineering | PC | 3-0-0 | 3 | -- |
| 5. | 161CE55 | Foundation Engineering | PC | 3-0-0 | 3 | 161CE43 |
| 6. | 161CE56 | Reinforced Concrete Structures - I | PC | 4-0-0 | 4 | -- |
| Practical | | | | | | |
| 7. | 161CE57 | Concrete and Highway Engineering Lab | PC | 0-0-3 | 2 | 161CE35 |
| 8. | 161CE58 | Soil Mechanics Laboratory | PC | 0-0-3 | 2 | 161CE43 |
| 9. | 161HS59 | <u>Career English - I</u> * | EEC | 0-0-3 | - | 161HS41 |
| | | | | | Total Credits – 24 | |

* - Mandatory Non-credit Course

SEMESTER - VI

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|--|----------|-------|---------------------------|---------------|
| Theory | | | | | | |
| 1. | 161HS61 | Engineering Economics and Management | HS | 3-0-0 | 3 | -- |
| 2. | 161CE61 | Structural Analysis – II | PC | 4-0-0 | 4 | 161CE51 |
| 3. | 161CE62 | Reinforced Concrete Structures - II | PC | 4-0-0 | 4 | 161CE56 |
| 4. | 161CE63 | Railway, Airport and Harbour Engineering | PC | 3-0-0 | 3 | 161CE54 |
| 5. | -- | Elective - I | PE | 3-0-0 | 3 | -- |
| 6. | -- | Elective – II | PE/OE | 3-0-0 | 3 | -- |
| Practical | | | | | | |
| 7. | 161CE67 | Structural Design and Detailing Laboratory | PC | 0-0-3 | 2 | 161CE62 |
| 8. | 161CE68 | Environmental Engineering Laboratory | PC | 0-0-3 | 2 | 161CE45 |
| 9. | 161HS69 | <u>Career English - II</u> * | EEC | 0-0-3 | 1* | 161HS51 |
| | | | | | Total Credits – 24 | |

* - Mandatory Non-credit Course

SEMESTER – VII

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|--|----------|-------|---------------------------|---------------|
| Theory | | | | | | |
| 1. | 161CE71 | Construction Management | ES | 3-0-0 | 3 | -- |
| 2. | 161CE72 | Basics of Dynamics and Aseismic Design | PC | 3-0-0 | 3 | -- |
| 3. | 161CE73 | Quantity Surveying and Valuation | PC | 3-0-0 | 3 | -- |
| 4. | 161CE74 | Design of Steel Structures | PC | 4-0-0 | 4 | -- |
| 5. | -- | Elective – III | PE | 3-0-0 | 3 | -- |
| 6. | -- | Elective – IV | PE/OE | 3-0-0 | 3 | -- |
| Practical | | | | | | |
| 7. | 161CE77 | Computer Applications Laboratory | PC | 0-0-3 | 2 | -- |
| 8. | 161CE78 | Design Project | EEC | 0-0-3 | 2 | -- |
| | | | | | Total Credits – 23 | |

SEMESTER – VIII

| Sl.No | Subject Code | Subject | Category | L-T-P | C | Pre-requisite |
|------------------|--------------|--------------|----------|--------|---------------------------|---------------|
| Theory | | | | | | |
| 1. | -- | Elective –V | PE | 3-0-0 | 3 | -- |
| 2. | -- | Elective –VI | PE | 3-0-0 | 3 | -- |
| Practical | | | | | | |
| 3 | 161CE87 | Project Work | EEC | 0-0-12 | 6 | -- |
| | | | | | Total Credits – 12 | |

I. LIST OF PROGRAMME ELECTIVES (PE)

| Sl.No. | Subject Code | Subject | L-T-P | C |
|---------------|---------------------|---|--------------|----------|
| 3. | 161CEE03 | Prefabricated Structures | 3-0-0 | 3 |
| 4. | 161CEE04 | Prestressed Concrete Structures | 3-0-0 | 3 |
| 5. | 161CEE05 | Industrial Structures | 3-0-0 | 3 |
| 6. | 161CEE06 | Repair and Rehabilitation of Structures | 3-0-0 | 3 |
| 7. | 161CEE07 | Smart Materials and Structures | 3-0-0 | 3 |
| 8. | 161CEE08 | Hydraulic Structures | 3-0-0 | 3 |
| 11. | 161CEE11 | Industrial Waste Water Management | 3-0-0 | 3 |
| 12. | 161CEE12 | Air Pollution Management | 3-0-0 | 3 |
| 13. | 161CEE13 | Municipal Solid Waste Management | 3-0-0 | 3 |
| 14. | 161CEE14 | Climate change and Adaptation | 3-0-0 | 3 |
| 16. | 161CEE16 | Traffic Engineering and Management | 3-0-0 | 3 |
| 17. | 161CEE17 | Town Planning & Architecture | 3-0-0 | 3 |
| 18. | 161CEE18 | Remote Sensing and GIS | 3-0-0 | 3 |
| 19. | 161CEE19 | Ground Improvement Techniques | 3-0-0 | 3 |
| 20. | 161CEE20 | Contract Laws And Regulations | 3-0-0 | 3 |

II. LIST OF OPEN ELECTIVES (OE)

| OPEN ELECTIVES OFFERED BY CSE DEPARTMENT | | | | |
|---|--------------|---|-------|---|
| Sl.No. | Subject Code | Subject | L-T-P | C |
| 1. | 161OE101 | Web development using PHP | 3-0-0 | 3 |
| 2. | 161OE102 | Programming in PERL | 3-0-0 | 3 |
| 3. | 161OE103 | Multimedia & Animation Tools | 3-0-0 | 3 |
| 4. | 161OE104 | Multi core Architecture | 3-0-0 | 3 |
| 5. | 161OE105 | Green Computing | 3-0-0 | 3 |
| 6. | 161OE106 | Soft Computing | 3-0-0 | 3 |
| 7. | 161OE107 | Java Scripts | 3-0-0 | 3 |
| OPEN ELECTIVES OFFERED BY ECE DEPARTMENT | | | | |
| 8. | 161OE201 | Bio Medical Instrumentation | 3-0-0 | 3 |
| 9. | 161OE202 | Digital Image Processing | 3-0-0 | 3 |
| 10. | 161OE203 | Consumer Electronics | 3-0-0 | 3 |
| 11. | 161OE204 | Multimedia Compression and Communication | 3-0-0 | 3 |
| 12. | 161OE205 | High Speed Networks | 3-0-0 | 3 |
| OPEN ELECTIVES OFFERED BY EEE DEPARTMENT | | | | |
| 13. | 161OE401 | Energy audit and conservation | 3-0-0 | 3 |
| 14. | 161OE402 | Principles of Virtual Instrumentation | 3-0-0 | 3 |
| 15. | 161OE403 | Sensors and Transducers | 3-0-0 | 3 |
| 16. | 161OE404 | Aircraft electronic system | 3-0-0 | 3 |
| 17. | 161OE405 | Electrical safety | 3-0-0 | 3 |
| 18. | 161OE406 | Vehicle electric power Systems | 3-0-0 | 3 |
| 19. | 161OE407 | Domestic and Industrial Electrical Installation | 3-0-0 | 3 |
| OPEN ELECTIVES OFFERED BY BIO-TECH DEPARTMENT | | | | |
| 20. | 161OE501 | Process Equipment and Plant Design | 3-0-0 | 3 |
| 21. | 161OE502 | Biomaterials | 3-0-0 | 3 |
| 22. | 161OE503 | Biosensors | 3-0-0 | 3 |
| 23. | 161OE504 | Food Science and Technology | 3-0-0 | 3 |
| OPEN ELECTIVES OFFERED BY MECHANICAL ENGG DEPARTMENT | | | | |
| 24. | 161OE601 | Maintenance Engineering | 3-0-0 | 3 |
| 25. | 161OE602 | Non Destructive Testing and Materials | 3-0-0 | 3 |
| 26. | 161OE603 | Operations Research | 3-0-0 | 3 |
| 27. | 161OE604 | Renewable Sources of Energy | 3-0-0 | 3 |
| 28. | 161OE605 | Robotics | 3-0-0 | 3 |
| OPEN ELECTIVES OFFERED BY CIVIL ENGG DEPARTMENT | | | | |
| 29. | 161OE701 | Disaster Management System | 3-0-0 | 3 |
| 30. | 161OE702 | Fundamentals of Fire Safety Engineering | 3-0-0 | 3 |
| 32. | 161OE704 | Renewable Energy Sources | 3-0-0 | 3 |
| 33. | 161OE705 | Environmental Impact and Risk Assessment | 3-0-0 | 3 |
| 34. | 161OE706 | Environment and Ecology | 3-0-0 | 3 |
| 35. | 161OE707 | Technology Management | 3-0-0 | 3 |
| 36. | 161OE708 | Sustainable Management of Urban Ecology | 3-0-0 | 3 |

| OPEN ELECTIVES OFFERED BY MBA DEPARTMENT | | | | |
|--|----------|------------------------------------|-------|---|
| 37. | 161OE801 | Essentials of Management | 3-0-0 | 3 |
| 38. | 161OE802 | Fundamentals of Marketing | 3-0-0 | 3 |
| 39. | 161OE803 | Managing Human Resources | 3-0-0 | 3 |
| 40. | 161OE804 | Professional Ethics in Engineering | 3-0-0 | 3 |

**B.E. COMPUTER SCIENCE AND ENGINEERING
CURRICULUM [I - VIII SEMESTER]**

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|--------------------------------------|----------|-------|-----------|
| SEMESTER I | | | | | |
| Theory | | | | | |
| 1 | 161HS11 | Essential English | HS | 3-0-0 | 3 |
| 2 | 161MA11 | Engineering Mathematics - I | BS | 3-1-0 | 4 |
| 3 | 161PH11 | Engineering Physics | BS | 3-0-0 | 3 |
| 4 | 161CY11 | Engineering Chemistry | BS | 3-0-0 | 3 |
| 5 | 161CS11 | Computer Programming | ES | 3-0-0 | 3 |
| 6 | 161ME11 | Engineering Graphics | ES | 1-0-3 | 3 |
| Practical | | | | | |
| 7 | 161PC17 | Physics and Chemistry Laboratory - 1 | BS | 0-0-4 | 2 |
| 8 | 161CS17 | Computer Practices Laboratory | ES | 0-0-4 | 2 |
| 9 | 161EE17 | Engineering Practices Laboratory | ES | 0-0-4 | 2 |
| No. of Credits: | | | | | 25 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|--|----------|-------|-----------|
| SEMESTER II | | | | | |
| Theory | | | | | |
| 1 | 161HS21 | Technical English | HS | 3-0-0 | 3 |
| 2 | 161MA21 | Engineering Mathematics-II | BS | 3-1-0 | 4 |
| 3 | 161PH21 | Physics of Materials | BS | 3-0-0 | 3 |
| 4 | 161CY21 | Environmental Science | ES | 3-0-0 | 3 |
| 5 | 161CS21 | Object Oriented Programming | ES | 3-0-0 | 3 |
| 6 | 161CS22 | Digital Principles and Systems Design | ES | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161PC27 | Physics and Chemistry Laboratory - II | BS | 0-0-4 | 2 |
| 8 | 161CS27 | Object Oriented Programming Laboratory | ES | 0-0-4 | 2 |
| 9 | 161CS28 | Digital Laboratory | ES | 0-0-4 | 2 |
| No. of Credits: | | | | | 25 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------------------|-------------|---|----------|-------|--------|
| SEMESTER III | | | | | |
| Theory | | | | | |
| 1 | 161MA31 | Transforms and Partial Differential Equations | BS | 3-1-0 | 4 |
| 2 | 161CS31 | Data Structures | PC | 3-0-0 | 3 |
| 3 | 161CS32 | Computer Organization & Architecture | PC | 3-0-0 | 3 |
| 4 | 161CS33 | Microprocessors and Microcontrollers | ES | 3-0-2 | 4 |
| 5 | 161CS34 | Operating System | PC | 3-0-0 | 3 |
| 6 | 161CS35 | Programming in Python | PC | 3-0-2 | 4 |

| Practical | | | | | |
|------------------------|---------|-----------------------------|-----|-------|-----------|
| 7 | 161CS37 | Data Structures Laboratory | PC | 0-0-4 | 2 |
| 8 | 161CS38 | Operating system Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS39 | Functional English – I | EEC | 0-0-2 | MC |
| No. of Credits: | | | | | 25 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|--|----------|-------|-----------|
| SEMESTER IV | | | | | |
| Theory | | | | | |
| 1 | 161MA41 | Probability and Random Processes | BS | 3-0-0 | 3 |
| 2 | 161CS41 | Computer Networks | PC | 3-0-2 | 4 |
| 3 | 161CS42 | Programming with JAVA | PC | 3-0-0 | 3 |
| 4 | 161CS43 | Design and Analysis of Algorithms | PC | 3-0-0 | 3 |
| 5 | 161CS44 | Database Management Systems | PC | 3-0-0 | 3 |
| 6 | 161CS45 | Object Oriented Software Engineering | PC | 3-0-2 | 4 |
| Practical | | | | | |
| 7 | 161CS47 | Java Laboratory | PC | 0-0-4 | 2 |
| 8 | 161CS48 | Database Management Systems Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS49 | Functional English – II | EEC | 0-0-2 | MC |
| No. of Credits: | | | | | 24 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|---------------------------------|----------|-------|-----------|
| SEMESTER V | | | | | |
| Theory | | | | | |
| 1 | 161MA51 | Discrete Mathematics | BS | 3-0-0 | 3 |
| 2 | 161CS51 | Cryptography & Network Security | PC | 3-0-0 | 3 |
| 3 | 161CS52 | Mobile and Pervasive Computing | PC | 3-0-0 | 3 |
| 4 | 161CS53 | Theory of Computation | PC | 3-0-0 | 3 |
| 5 | 161CS54 | Cloud Computing | PC | 3-0-0 | 3 |
| 6 | 161CS55 | C# and .Net Programming | PC | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161CS57 | C# and .Net Laboratory | PC | 0-0-4 | 2 |
| 8 | 161CS58 | Open Source Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS59 | Career English – I | EEC | 0-0-2 | MC |
| No. of Credits: | | | | | 22 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|---|----------|-------|-----------|
| SEMESTER VI | | | | | |
| Theory | | | | | |
| 1 | 161HS61 | Engineering Economics and Management | HS | 3-0-0 | 3 |
| 2 | 161CS61 | Mobile Application Development | PC | 3-0-0 | 3 |
| 3 | 161CS62 | System Software & Compiler Design | PC | 3-0-0 | 3 |
| 4 | 161CS63 | Digital Signal Processing | ES | 3-0-0 | 3 |
| 5 | 161CS** | Elective I* | PE | 3-0-0 | 3 |
| 6 | 161CS** | Elective II* | PE/OE | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161CS67 | Mobile Application Development Laboratory | PC | 0-0-4 | 2 |
| 8 | 161CS68 | System Software & Compiler Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS69 | Career English - II | EEC | 0-0-2 | MC |
| No. of Credits: | | | | | 22 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------|-------------|--------------------------------|----------|-------|-----------|
| SEMESTER VII | | | | | |
| Theory | | | | | |
| 1 | 161CS71 | Big data Analytics | PC | 3-0-0 | 3 |
| 2 | 161CS72 | Internet of Things | PC | 3-0-0 | 3 |
| 3 | 161CS73 | Computer Graphics & Multimedia | PC | 3-0-2 | 4 |
| 4 | 161CS74 | Web Technology | PC | 3-0-0 | 3 |
| 5 | 161CS** | Elective III* | PE | 3-0-0 | 3 |
| 6 | 161CS** | Elective IV* | PE/OE | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161CS77 | Big data analytics Laboratory | PC | 0-0-4 | 2 |
| 8 | 161CS78 | Web technology Laboratory | PC | 0-0-4 | 2 |
| No. of Credits: | | | | | 23 |

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|------------------------------|-------------|--------------------|----------|--------|------------|
| SEMESTER VIII | | | | | |
| Theory | | | | | |
| 1 | 161CS** | Elective V* | PE | 3-0-0 | 3 |
| 2 | 161CS** | Elective VI* | PE | 3-0-0 | 3 |
| Practical | | | | | |
| 3 | 161CS81 | Project Work | EEC | 0-0-12 | 6 |
| No. of Credits: | | | | | 12 |
| Total No. of Credits: | | | | | 178 |

| S. No. | Categories | Total Number of Credits(178) | Weightage | AICTE Weightage |
|--------|--|------------------------------|-----------|-----------------|
| 1. | HS - Humanities and Social Science including Management. | 09 | 5.05 | 09 |
| 2. | BS - Basic Science | 31 | 17.41 | 31 |
| 3. | ES - Engineering Sciences | 30 | 16.85 | 27 |
| 4. | FC - Foundation Course | - | - | - |
| 5. | PC - Program Core | 84 | 47.19 | 84 |
| 6. | PE - Program Elective | 12 | 06.74 | 12 |
| 7. | OE - Open Elective | 06 | 03.37 | 06 |
| 8. | EEC - Employability Enhancement Courses | 06 | 03.37 | 06 |
| 9. | MC - Mandatory Course | 00 | 00 | 03 |

LIST OF ELECTIVES

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|--------------------------------------|----------|-------|--------|
| 1 | 161CSE01 | Advanced Database Systems | PE | 3-0-0 | 3 |
| 2 | 161CSE02 | Advanced JAVA Programming | PE | 3-0-0 | 3 |
| 3 | 161CSE03 | Ad hoc and Sensor Networks | PE | 3-0-0 | 3 |
| 4 | 161CSE04 | Network Analysis and Management | PE | 3-0-0 | 3 |
| 5 | 161CSE05 | High Speed Networks | PE | 3-0-0 | 3 |
| 6 | 161CSE06 | Information Retrieval | PE | 3-0-0 | 3 |
| 7 | 161CSE07 | Resource Management Techniques | PE | 3-0-0 | 3 |
| 8 | 161CSE08 | Artificial Intelligence and Robotics | PE | 3-0-0 | 3 |
| 9 | 161CSE09 | Natural Language Processing | PE | 3-0-0 | 3 |
| 10 | 161CSE10 | Human Computer Interaction | PE | 3-0-0 | 3 |
| 11 | 161CSE11 | Knowledge Management | PE | 3-0-0 | 3 |
| 12 | 161CSE12 | Data Mining Techniques | PE | 3-0-0 | 3 |
| 13 | 161CSE13 | Machine learning Techniques | PE | 3-0-0 | 3 |
| 14 | 161CSE14 | Digital Image Processing | PE | 3-0-0 | 3 |
| 15 | 161CSE15 | Computational Biology | PE | 3-0-0 | 3 |
| 16 | 161CSE16 | Software Testing | PE | 3-0-0 | 3 |
| 17 | 161CSE17 | Embedded and Real Time Systems | PE | 3-0-0 | 3 |
| 18 | 161CSE18 | Game Programming | PE | 3-0-0 | 3 |
| 19 | 161CSE19 | Graph Theory and Applications | PE | 3-0-0 | 3 |
| 20 | 161CSE20 | Service Oriented Architecture | PE | 3-0-0 | 3 |
| 21 | 161CSE21 | Software Project Management | PE | 3-0-0 | 3 |
| 22 | 161CSE22 | Software Engineering Practices | PE | 3-0-0 | 3 |
| 23 | 161CSE23 | Social Network Analysis | PE | 3-0-0 | 3 |
| 24 | 161CSE24 | Nano Computing | PE | 3-0-0 | 3 |
| 25 | 161CSE25 | Data Science and Analytics | PE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF CSE

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|--------------------------------|----------|-------|--------|
| 1 | 161OE101 | Web development using PHP | OE | 3-0-0 | 3 |
| 2 | 161OE102 | Programming in PERL | OE | 3-0-0 | 3 |
| 3 | 161OE103 | Multimedia and Animation Tools | OE | 3-0-0 | 3 |
| 4 | 161OE104 | Multicore Architecture | OE | 3-0-0 | 3 |
| 5 | 161OE105 | Green Computing | OE | 3-0-0 | 3 |
| 6 | 161OE106 | Soft Computing | OE | 3-0-0 | 3 |
| 7 | 161OE107 | Java Scripts | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF ECE

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|--|----------|-------|--------|
| 1 | 161OE201 | Bio Medical Instrumentation | OE | 3-0-0 | 3 |
| 2 | 161OE202 | Digital Image Processing | OE | 3-0-0 | 3 |
| 3 | 161OE203 | Consumer Electronics | OE | 3-0-0 | 3 |
| 4 | 161OE204 | Multimedia Compression and Communication | OE | 3-0-0 | 3 |
| 5 | 161OE205 | High Speed Networks | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF EEE

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|---|----------|-------|--------|
| 1 | 161OE401 | Energy Audit and Conservation | OE | 3-0-0 | 3 |
| 2 | 161OE402 | Principles of Virtual Instrumentation | OE | 3-0-0 | 3 |
| 3 | 161OE403 | Sensors and Transducers | OE | 3-0-0 | 3 |
| 4 | 161OE404 | Aircraft Electronic System | OE | 3-0-0 | 3 |
| 5 | 161OE405 | Electrical Safety | OE | 3-0-0 | 3 |
| 6 | 161OE406 | Vehicle Electric Power Systems | OE | 3-0-0 | 3 |
| 7 | 161OE407 | Domestic and Industrial Electrical Installation | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF BIO-TECH

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|------------------------------------|----------|-------|--------|
| 1 | 161OE501 | Process Equipment and Plant Design | OE | 3-0-0 | 3 |
| 2 | 161OE502 | Biomaterials | OE | 3-0-0 | 3 |
| 3 | 161OE503 | Biosensors | OE | 3-0-0 | 3 |
| 4 | 161OE504 | Food Science and Technology | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF MECHANICAL

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|---------------------------------------|----------|-------|--------|
| 1 | 161OE601 | Maintenance Engineering | OE | 3-0-0 | 3 |
| 2 | 161OE602 | Non Destructive Testing and Materials | OE | 3-0-0 | 3 |
| 3 | 161OE603 | Operations Research | OE | 3-0-0 | 3 |
| 4 | 161OE604 | Renewable Sources of Energy | OE | 3-0-0 | 3 |
| 5 | 161OE605 | Robotics | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF CIVIL

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|--|----------|-------|--------|
| 1 | 161OE701 | Disaster Management System | OE | 3-0-0 | 3 |
| 2 | 161OE702 | Fundamentals of Fire Safety Engineering | OE | 3-0-0 | 3 |
| 3 | 161OE703 | Optimization in Engineering | OE | 3-0-0 | 3 |
| 4 | 161OE704 | Renewable Energy Sources | OE | 3-0-0 | 3 |
| 5 | 161OE705 | Environmental Impact and Risk Assessment | OE | 3-0-0 | 3 |
| 6 | 161OE706 | Environment and Ecology | OE | 3-0-0 | 3 |
| 7 | 161OE707 | Technology Management | OE | 3-0-0 | 3 |
| 8 | 161OE708 | Sustainable Management of Urban Ecology | OE | 3-0-0 | 3 |

OPEN ELECTIVES OFFERED BY DEPARTMENT OF MBA

| S. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|--------|-------------|------------------------------------|----------|-------|--------|
| 1 | 161OE801 | Essentials of Management | OE | 3-0-0 | 3 |
| 2 | 161OE802 | Fundamentals of Marketing | OE | 3-0-0 | 3 |
| 3 | 161OE803 | Managing Human Resources | OE | 3-0-0 | 3 |
| 4 | 161OE804 | Professional Ethics in Engineering | OE | 3-0-0 | 3 |

**B.E. – ELECTRONICS AND COMMUNICATION ENGINEERING
CURRICULUM
[I To VIII SEMESTER]**

| SEMESTER – I | | | | | |
|---------------------------|---------|------------------------------------|----------|-------|---|
| S.No | Code | Course Title | Category | L-T-P | C |
| 1 | 161HS11 | Essential English | HS | 3-0-0 | 3 |
| 2 | 161MA11 | Engineering Mathematics – I | BS | 3-2-0 | 4 |
| 3 | 161PH11 | Engineering Physics | BS | 3-0-0 | 3 |
| 4 | 161CY11 | Engineering Chemistry | BS | 3-0-0 | 3 |
| 5 | 161CS11 | Computer Programming | ES | 3-0-0 | 3 |
| 6 | 161ME11 | Engineering Graphics | ES | 1-0-4 | 3 |
| 7 | 161PC17 | Physics and Chemistry Laboratory-I | BS | 0-0-4 | 2 |
| 8 | 161CS17 | Computer Practices Laboratory | ES | 0-0-4 | 2 |
| 9 | 161EE17 | Engineering Practices Laboratory | ES | 0-0-4 | 2 |
| No. of Credits: 25 | | | | | |

| SEMESTER – II | | | | | |
|---------------------------|---------|-------------------------------------|----------|-------|---|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1 | 161HS21 | Technical English | HS | 3-0-0 | 3 |
| 2 | 161MA21 | Engineering Mathematics – II | BS | 3-2-0 | 4 |
| 3 | 161PH21 | Physics of Materials | BS | 3-0-0 | 3 |
| 4 | 161CY21 | Environmental Science | BS | 3-0-0 | 3 |
| 5 | 161EC21 | Electronic Devices | PC | 3-0-0 | 3 |
| 6 | 161EE21 | Electric Circuit Theory | PC | 3-0-0 | 3 |
| 7 | 161PC27 | Physics and Chemistry Laboratory-II | BS | 0-0-4 | 2 |
| 8 | 161EC27 | UNIX Laboratory | ES | 0-0-4 | 2 |
| 9 | 161EC28 | Circuits and Devices Laboratory | PC | 0-0-4 | 2 |
| No. of Credits: 25 | | | | | |

| SEMESTER – III | | | | | |
|---------------------------|---------|---|----------|-------|---|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161MA31 | Transforms and Partial Differential Equations | BS | 3-2-0 | 4 |
| 2. | 161EC31 | Analog Electronic Circuits | PC | 3-0-0 | 3 |
| 3. | 161EC32 | Digital Electronics | PC | 3-0-0 | 3 |
| 4. | 161EC33 | Electromagnetic Fields | PC | 3-0-0 | 3 |
| 5. | 161EC34 | Electronic Measurements and Instrumentation | PC | 3-0-0 | 3 |
| 6. | 161EC35 | Data Structures and C++ | ES | 3-0-0 | 3 |
| 7. | 161EC37 | Analog Electronic Circuits Laboratory | PC | 0-0-4 | 2 |
| 8. | 161EC38 | Data Structures and C++ Laboratory | ES | 0-0-4 | 2 |
| 9. | 161HS39 | Functional English I | MC | 0-0-2 | 0 |
| No. of Credits: 23 | | | | | |

| SEMESTER – IV | | | | | |
|---------------------------|-------------|-----------------------------------|-----------------|--------------|----------|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161MA41 | Probability and Random Processes | BS | 3-0-0 | 3 |
| 2. | 161EC41 | Analog Communication | PC | 3-0-0 | 3 |
| 3. | 161EC42 | Linear Integrated Circuits | PC | 3-0-0 | 3 |
| 4. | 161EC43 | Signals and Systems | PC | 3-2-0 | 4 |
| 5. | 161EC44 | Transmission Lines and Waveguides | PC | 3-0-0 | 3 |
| 6. | 161EC45 | Electrical Engineering | ES | 3-0-2 | 4 |
| 7. | 161EC47 | Integrated Circuits Laboratory | PC | 0-0-4 | 2 |
| 8. | 161EC48 | Engineering Software Laboratory | PC | 0-0-4 | 2 |
| 9. | 161HS49 | Functional English - II | MC | 0-0-2 | 0 |
| No. of Credits: 24 | | | | | |

| SEMESTER V | | | | | |
|---------------------------|-------------|--------------------------------------|-----------------|--------------|----------|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161EC51 | Control Systems | PC | 3-0-0 | 3 |
| 2. | 161EC52 | Digital Communication | PC | 3-0-0 | 3 |
| 3. | 161EC53 | VLSI Design | PC | 3-0-0 | 3 |
| 4. | 161EC54 | Antennas and Wave Propagation | PC | 3-0-0 | 3 |
| 5. | 161EC55 | Digital Signal Processing | PC | 3-2-0 | 4 |
| 6. | 161EC56 | Microprocessors and Microcontrollers | PC | 3-0-0 | 3 |
| 7. | 161EC57 | Communication Systems Laboratory | PC | 0-0-4 | 2 |
| 8. | 161EC58 | VLSI Laboratory | PC | 0-0-4 | 2 |
| 9. | 161HS59 | Career English I | MC | 0-0-2 | 0 |
| No. of Credits: 23 | | | | | |

| SEMESTER VI | | | | | |
|---------------------------|-------------|--------------------------------------|-----------------|--------------|----------|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161EC61 | Embedded Systems | PC | 3-0-0 | 3 |
| 2. | 161EC62 | DSP Architecture and Applications | PC | 3-0-0 | 3 |
| 3. | 161EC63 | Microwave Engineering | PC | 3-0-0 | 3 |
| 4. | 161HS61 | Engineering Economics and Management | HS | 3-0-0 | 3 |
| 5. | - | Elective I* | PE | 3-0-0 | 3 |
| 6. | - | Elective II* | OE / PE | 3-0-0 | 3 |
| 7. | 161EC67 | Embedded Systems Laboratory | PC | 0-0-4 | 2 |
| 8. | 161EC68 | DSP and Processor Laboratory | PC | 0-0-4 | 2 |
| 9. | 161EC69 | Mini Project | EEC | 0-0-2 | 1 |
| 10. | 161HS69 | Career English II | MC | 0-0-2 | 0 |
| No. of Credits: 23 | | | | | |

| SEMESTER VII | | | | | |
|---------------------|---------|--|----------|-------|---------------------------|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161EC71 | Wireless Communication | PC | 3-0-0 | 3 |
| 2. | 161EC72 | Fiber Optic Communication and Networks | PC | 3-0-0 | 3 |
| 3. | 161EC73 | RF Circuits | PC | 3-0-0 | 3 |
| 4. | 161EC74 | Computer Networks | PC | 3-0-0 | 3 |
| 5. | - | Elective III* | PE | 3-0-0 | 3 |
| 6. | - | Elective IV* | OE / PE | 3-0-0 | 3 |
| 7. | 161EC77 | Microwave and Optical Laboratory | PC | 0-0-4 | 2 |
| 8. | 161EC78 | Computer Networks Laboratory | PC | 0-0-4 | 2 |
| | | | | | No. of Credits: 22 |

| SEMESTER – VIII | | | | | |
|------------------------|---------|--------------|----------|--------|--------------------------|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | - | Elective V* | PE | 3-0-0 | 3 |
| 2. | - | Elective VI* | PE | 3-0-0 | 3 |
| 3. | 161EC89 | Project Work | EEC | 0-0-12 | 6 |
| | | | | | No. of Credits:12 |

Total Number of Credits: 177

| PROGRAMME ELECTIVES | | | | | |
|----------------------------|----------|--|----------|-------|---|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1. | 161ECE01 | Satellite Communication | PE | 3-0-0 | 3 |
| 2. | 161ECE03 | Cognitive Radio | PE | 3-0-0 | 3 |
| 3. | 161ECE05 | RFID and its Applications | PE | 3-0-0 | 3 |
| 4. | 161ECE06 | Smart RADAR systems | PE | 3-0-0 | 3 |
| 5. | 161ECE07 | Speech Processing | PE | 3-0-0 | 3 |
| 6. | 161ECE11 | Energy Aware Computing | PE | 3-0-0 | 3 |
| 7. | 161ECE12 | Industrial Internet of Things Design | PE | 3-0-0 | 3 |
| 8. | 161ECE13 | Electronic Product Design | PE | 3-0-0 | 3 |
| 9. | 161ECE15 | Low Power VLSI | PE | 3-0-0 | 3 |
| 10. | 161ECE18 | Wearable Electronics | PE | 3-0-0 | 3 |
| 11. | 161ECE19 | MEMS and NEMS | PE | 3-0-0 | 3 |
| 12. | 161ECE20 | Agriculture Electronics | PE | 3-0-0 | 3 |
| 13. | 161ECE22 | Smart Structures and Smart Materials | PE | 3-0-0 | 3 |
| 14. | 161ECE23 | Cyber Security | PE | 3-0-0 | 3 |
| 15. | 161ECE24 | Cryptography and Network security | PE | 3-0-0 | 3 |
| 16. | 161ECE26 | Computer Architecture and Organization | PE | 3-0-0 | 3 |
| 17. | 161ECE27 | Cloud Computing | PE | 3-0-0 | 3 |
| 18. | 161ECE29 | Multicore Programming | PE | 3-0-0 | 3 |
| 19. | 161ECE30 | Quantum Computing | PE | 3-0-0 | 3 |

| OPEN ELECTIVES | | | | | |
|-----------------------|----------|-----------------------------|----------|-------|---|
| S.NO | Code | Course Title | Category | L-T-P | C |
| 1 | 161OE201 | Bio Medical Instrumentation | OE | 3-0-0 | 3 |
| 2 | 161OE202 | Digital Image Processing | OE | 3-0-0 | 3 |

| | | | | | |
|---|----------|--|----|-------|---|
| 3 | 161OE203 | Consumer Electronics | OE | 3-0-0 | 3 |
| 4 | 161OE204 | Multimedia Compression and Communication | OE | 3-0-0 | 3 |
| 5 | 161OE205 | High Speed Networks | OE | 3-0-0 | 3 |

HS – Humanities and Science, BS – Basic Sciences, ES- Engineering Sciences, PC – Programme Core, PE – Programme Elective, OE - Open Elective, MC – Mandatory Courses, EEC – Employability Enhancement Courses.

OPEN ELECTIVES OFFERED BY VARIOUS DEPARTMENTS

| S.NO | Code | Course Title | Category | L-T-P | C |
|---|----------|---|----------|-------|---|
| DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING | | | | | |
| 1 | 161OE101 | Web development using PHP | OE | 3-0-0 | 3 |
| 2 | 161OE102 | Programming in PERL | OE | 3-0-0 | 3 |
| 3 | 161OE103 | Multimedia & Animation Tools | OE | 3-0-0 | 3 |
| 4 | 161OE104 | Multicore Architecture | OE | 3-0-3 | 3 |
| 5 | 161OE105 | Green Computing | OE | 3-0-3 | 3 |
| 6 | 161OE106 | Soft Computing | OE | 3-0-3 | 3 |
| 7 | 161OE107 | Java Scripts | OE | 3-0-3 | 3 |
| DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING | | | | | |
| 1 | 161OE401 | Energy audit and conservation | OE | 3-0-0 | 3 |
| 2 | 161OE402 | Principles of Virtual Instrumentation | OE | 3-0-0 | 3 |
| 3 | 161OE403 | Sensors and Transducers | OE | 3-0-0 | 3 |
| 4 | 161OE404 | Aircraft electronic system | OE | 3-0-0 | 3 |
| 5 | 161OE405 | Electrical safety | OE | 3-0-0 | 3 |
| 6 | 161OE406 | Vehicle electric power Systems | OE | 3-0-0 | 3 |
| 7 | 161OE407 | Domestic and Industrial Electrical Installation | OE | 3-0-0 | 3 |
| DEPARTMENT OF BIO TECHNOLOGY | | | | | |
| 1 | 161OE501 | Process Equipment and Plant Design | OE | 3-0-0 | 3 |
| 2 | 161OE502 | Biomaterials | OE | 3-0-0 | 3 |
| 3 | 161OE503 | Biosensors | OE | 3-0-0 | 3 |
| 4 | 161OE504 | Food Science and Technology | OE | 3-0-0 | 3 |
| DEPARTMENT OF MECHANICAL ENGINEERING | | | | | |
| 1 | 161OE601 | Maintenance Engineering | OE | 3-0-0 | 3 |
| 2 | 161OE602 | Non Destructive Testing and Materials | OE | 3-0-0 | 3 |
| 3 | 161OE603 | Operations Research | OE | 3-0-0 | 3 |
| 4 | 161OE604 | Renewable Sources of Energy | OE | 3-0-0 | 3 |
| 5 | 161OE605 | Robotics | OE | 3-0-0 | 3 |
| DEPARTMENT OF CIVIL ENGINEERING | | | | | |
| 1. | 161OE701 | Disaster Management System | OE | 3-0-0 | 3 |
| 2. | 161OE702 | Fundamentals of Fire Safety Engineering | OE | 3-0-0 | 3 |
| 3. | 161OE703 | Optimization in Engineering | OE | 3-0-0 | 3 |
| 4. | 161OE704 | Renewable Energy Sources | OE | 3-0-0 | 3 |
| 5. | 161OE705 | Environmental Impact and Risk Assessment | OE | 3-0-0 | 3 |
| 6. | 161OE706 | Environment and Ecology | OE | 3-0-0 | 3 |
| 7. | 161OE707 | Technology Management | OE | 3-0-0 | 3 |
| 8. | 161OE708 | Sustainable Management of Urban Ecology | OE | 3-0-0 | 3 |

| DEPARTMENT OF MANAGEMENT STUDIES | | | | | |
|---|----------|------------------------------------|----|-------|---|
| 1 | 161OE801 | Essentials of Management | OE | 3-0-0 | 3 |
| 2 | 161OE802 | Fundamentals of Marketing | OE | 3-0-0 | 3 |
| 3 | 161OE803 | Managing Human Resources | OE | 3-0-0 | 3 |
| 4 | 161OE804 | Professional Ethics in Engineering | OE | 3-0-0 | 3 |

**B.E. ELECTRICAL AND ELECTRONICS ENGINEERING
CURRICULUM
[I – VIII SEMESTERS - FULL TIME]**

Total Credits: 179

| SEMESTER - I | | | | | |
|---------------------------|---------|---|----------|-------|---|
| Sl | Code | Course Title | Category | L-T-P | C |
| 1 | 161HS11 | Essential English | HS | 3-0-0 | 3 |
| 2 | 161MA11 | Engineering Mathematics – I | BS | 3-2-0 | 4 |
| 3 | 161PH11 | Engineering Physics | BS | 3-0-0 | 3 |
| 4 | 161CY11 | Engineering Chemistry | BS | 3-0-0 | 3 |
| 5 | 161CS11 | Fundamentals of Computing and C Programming | ES | 3-0-0 | 3 |
| 6 | 161ME11 | Engineering Graphics | ES | 1-0-4 | 3 |
| 7 | 161PC17 | Physics and Chemistry Laboratory – I | BS | 0-0-4 | 2 |
| 8 | 161CS17 | Computer Practice Laboratory -1 | ES | 0-0-4 | 2 |
| 9. | 161EE17 | Engineering Practices Laboratory | ES | 0-0-4 | 2 |
| No. of Credits: 25 | | | | | |

SEMESTER – II

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|---------|---|----------|-------|---|
| 1 | 161HS21 | Technical English | HS | 3-0-0 | 3 |
| 2 | 161MA21 | Engineering Mathematics - II | BS | 3-2-0 | 4 |
| 3 | 161PH21 | Physics of Materials | BS | 3-0-0 | 3 |
| 4 | 161CY21 | Environmental Science | BS | 3-0-0 | 3 |
| 5 | 161EE21 | Electric Circuits Theory | PC | 2-2-0 | 3 |
| 6 | 161EE22 | Electronic Devices and Circuits | PC | 3-0-0 | 3 |
| 7 | 161PC27 | Physics and Chemistry Laboratory -II | BS | 0-0-4 | 2 |
| 8 | 161EE27 | Electric Circuits Laboratory | PC | 0-0-4 | 2 |
| 9 | 161EE28 | Electronics Devices and Circuits Laboratory | PC | 0-0-4 | 2 |
| No. of Credits: 25 | | | | | |

SEMESTER – III

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|---------|--|----------|-------|---|
| 1 | 161MA31 | Transforms and Partial Differential Equation | BS | 3-2-0 | 4 |
| 2 | 161EE31 | Linear Integrated Circuits | PC | 3-0-0 | 3 |
| 3 | 161EE32 | Digital Circuits and Design | PC | 3-0-0 | 3 |
| 4 | 161EE33 | Electromagnetic Theory | PC | 3-2-0 | 4 |
| 5 | 161EE34 | Measurements and Instrumentation | PC | 3-0-0 | 3 |
| 6 | 161EE35 | Data Structures and Algorithms | ES | 3-0-2 | 4 |
| 7 | 161EE37 | Integrated Circuits Laboratory | PC | 0-0-4 | 2 |
| 8 | 161EE38 | Measurements and Instrumentation Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS39 | Functional English I | EEC | 0-0-2 | 0 |
| No. of Credits: 25 | | | | | |

SEMESTER – IV

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|---------|--|----------|-------|---|
| 1 | 161MA42 | Statistics and Numerical Methods | BS | 2-2-0 | 3 |
| 2 | 161EE41 | Control Systems | PC | 2-2-0 | 3 |
| 3 | 161EE42 | DC Machines and Transformer | PC | 2-2-0 | 3 |
| 4 | 161EE43 | Basics of Power Plant Engineering | PC | 3-0-0 | 3 |
| 5 | 161EE44 | Transmission and Distribution | PC | 3-0-0 | 3 |
| 6 | 161EE45 | Communication Engineering | ES | 3-0-0 | 3 |
| 7 | 161EE47 | Control System Laboratory | PC | 0-0-4 | 2 |
| 8 | 161EE48 | DC Machines and Transformer Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS49 | Functional English II | EEC | 0-0-2 | 0 |
| No. of Credits: 22 | | | | | |

SEMESTER – V

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|---------|---------------------------------|----------|-------|---|
| 1 | 161EE51 | Digital Signal Processing | PC | 2-2-0 | 3 |
| 2 | 161EE52 | Rotating AC Machines | PC | 2-2-0 | 3 |
| 3 | 161EE53 | Power Electronics | PC | 2-2-0 | 3 |
| 4 | 161EE54 | Protection and Switchgear | PC | 3-0-0 | 3 |
| 5 | 161EE55 | High Voltage Engineering | PC | 3-0-0 | 3 |
| 6 | 161EE56 | Object Oriented Programming | ES | 3-0-2 | 4 |
| 7 | 161EE57 | Rotating AC Machines Laboratory | PC | 0-0-4 | 2 |
| 8 | 161EE58 | Power Electronics Laboratory | PC | 0-0-4 | 2 |
| 9 | 161HS59 | Career English I | EEC | 0-0-2 | 0 |
| No. of Credits: 23 | | | | | |

SEMESTER – VI

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|----------|--|----------|-------|---|
| 1 | 161EE61 | Power System Analysis | PC | 2-2-0 | 3 |
| 2 | 161EE62 | Solid State Drives | PC | 3-0-0 | 3 |
| 3 | 161EE63 | Advanced Microprocessor and Microcontrollers | PC | 3-0-0 | 3 |
| 4 | 161HS61 | Engineering Economics and Management | HS | 3-0-0 | 3 |
| 5 | 161EEEXX | Elective-I | PE | 3-0-0 | 3 |
| 6 | 161EEEXX | Elective-II | PE/OE | 3-0-0 | 3 |
| 7 | 161EE67 | Industrial Drives and Control Laboratory | PC | 0-0-4 | 2 |
| 8 | 161EE68 | Advanced Microprocessor and Microcontroller Laboratory | PC | 0-0-4 | 2 |
| 9 | 161EE69 | Mini Project | EEC | 0-0-2 | 1 |
| 10 | 161HS69 | Career English II | EEC | 0-0-2 | 0 |
| No. of Credits: 23 | | | | | |

SEMESTER – VII

| Sl | Code | Course Title | Category | L-T-P | C |
|----|----------|--|----------|-------|---|
| 1 | 161EE71 | Power System Operation and Control | PC | 2-2-0 | 3 |
| 2 | 161EE72 | Design of Electrical Machines | PC | 3-2-0 | 4 |
| 3 | 161EE73 | Wiring, Estimation and Costing | PC | 3-0-2 | 4 |
| 4 | 161EE74 | Electric Energy Generation, Utilization and Conservation | PC | 3-0-0 | 3 |
| 5 | 161EEEXX | Elective – III | PE | 3-0-0 | 3 |
| 6 | 161EEEXX | Elective – IV | PE/OE | 3-0-0 | 3 |
| 7 | 161EE77 | Power System Simulation Laboratory | PC | 0-0-4 | 2 |

| | | | | | |
|---------------------------|---------|--------------------------|----|-------|---|
| 8 | 161EE78 | Comprehension Laboratory | PC | 0-0-4 | 2 |
| No. of Credits: 24 | | | | | |

SEMESTER – VIII

| Sl | Code | Course Title | Category | L-T-P | C |
|---------------------------|----------|---------------|----------|--------|---|
| 1 | 161EEEXX | Elective – V | PE | 3-0-0 | 3 |
| 2 | 161EEEXX | Elective – VI | PE | 3-0-0 | 3 |
| 3 | 161EE87 | Project Work | EEC | 0-0-12 | 6 |
| No. of Credits: 12 | | | | | |

PROGRAM ELECTIVES

| Sl | Code | Course Title | Category | L-T-P | C |
|-----|----------|---|----------|-------|---|
| 1. | 161EEE01 | Power Quality | PE | 3-0-0 | 3 |
| 2. | 161EEE02 | High Voltage Transmission System | PE | 3-0-0 | 3 |
| 3. | 161EEE03 | Flexible AC Transmission Systems | PE | 3-0-0 | 3 |
| 4. | 161EEE04 | Renewable Energy Sources | PE | 3-0-0 | 3 |
| 5. | 161EEE05 | Special Electrical Machines and controllers | PE | 3-0-0 | 3 |
| 6. | 161EEE07 | Smart Grid Design and Analysis | PE | 3-0-0 | 3 |
| 7. | 161EEE11 | Power System Economics and Control Techniques | PE | 3-0-0 | 3 |
| 8. | 161EEE15 | Distributed Generation Systems and Micro grid | PE | 3-0-0 | 3 |
| 9. | 161EEE16 | High Voltage Direct Current Transmission | PE | 3-0-0 | 3 |
| 10. | 161EEE17 | CAD for Electrical Systems | PE | 3-0-0 | 3 |
| 11. | 161EEE19 | Distribution system automation | PE | 3-0-0 | 3 |
| 12. | 161EEE21 | Embedded System Design | PE | 3-0-0 | 3 |
| 13. | 161EEE22 | Robotics and Automation | PE | 3-0-0 | 3 |
| 14. | 161EEE24 | Bio-medical Instrumentation | PE | 3-0-0 | 3 |
| 15. | 161EEE25 | VHDL based Digital System Design | PE | 3-0-0 | 3 |
| 16. | 161EEE27 | Nano-Dielectrics | PE | 3-0-0 | 3 |
| 17. | 161EEE32 | Intelligent Control System | PE | 3-0-0 | 3 |
| 18. | 161EEE33 | PLC and Distributed control system | PE | 3-0-0 | 3 |

OPEN ELECTIVES

| Sl | Code | Course Title | Category | L-T-P | C |
|----|----------|---|----------|-------|---|
| 1. | 161OE401 | Energy Audit and Conservation | OE | 3-0-0 | 3 |
| 2. | 161OE403 | Sensors and Transducers | OE | 3-0-0 | 3 |
| 3. | 161OE406 | Vehicular Electric Power Systems | OE | 3-0-0 | 3 |
| 4. | 161OE407 | Domestic and Industrial Electrical Installation | OE | 3-0-0 | 3 |

DEPARTMENT OF MANAGEMENT STUDIES

| | | | | | |
|---|----------|------------------------------------|----|-------|---|
| 1 | 161OE801 | Essentials of Management | OE | 3-0-0 | 3 |
| 2 | 161OE802 | Fundamentals of Marketing | OE | 3-0-0 | 3 |
| 3 | 161OE803 | Managing Human Resources | OE | 3-0-0 | 3 |
| 4 | 161OE804 | Professional Ethics in Engineering | OE | 3-0-0 | 3 |

B.E. MECHANICAL ENGINEERING**CURRICULUM****[I – VIII SEMESTER]****SEMESTER – I**

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|--------------------------------------|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161HS11 | Essential English | HS | 3-0-0 | 3 |
| 2 | 161MA11 | Engineering Mathematics - I | BS | 3-1-0 | 4 |
| 3 | 161PH11 | Engineering Physics | BS | 3-0-0 | 3 |
| 4 | 161CY11 | Engineering Chemistry | BS | 3-0-0 | 3 |
| 5 | 161CS11 | Computer Programming | ES | 3-0-0 | 3 |
| 6 | 161ME11 | Engineering Graphics | ES | 1-0-3 | 3 |
| Practical | | | | | |
| 7 | 161PC17 | Physics and Chemistry Laboratory - I | BS | 0-0-3 | 2 |
| 8 | 161CS17 | Computer Practices Laboratory | ES | 0-0-3 | 2 |
| 9 | 161EE17 | Engineering Practices Laboratory | ES | 0-0-3 | 2 |
| No. of Credits: | | | | | 25 |

SEMESTER – II

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|---------------------------------------|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161HS21 | Technical English | HS | 3-0-0 | 3 |
| 2 | 161MA21 | Engineering Mathematics - II | BS | 3-1-0 | 4 |
| 3 | 161PH21 | Physics of Materials | BS | 3-0-0 | 3 |
| 4 | 161CY21 | Environmental Science and Engineering | BS | 3-0-0 | 3 |
| 5 | 161ME21 | Engineering Mechanics | ES | 2-2-0 | 3 |
| 6 | 161ME22 | Manufacturing Processes | PC | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161PC27 | Physics and Chemistry Laboratory – II | BS | 0-0-3 | 2 |
| 8 | 161ME23 | Computer Aided Drafting Laboratory | ES | 0-0-3 | 2 |
| 9 | 161ME24 | Manufacturing Processes Laboratory | PC | 0-0-3 | 2 |
| No. of Credits: | | | | | 25 |

SEMESTER – III

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|--|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161MA31 | Transforms and Partial Differential Equation | BS | 3-2-0 | 4 |
| 2 | 161ME31 | Manufacturing Technology | PC | 3-0-0 | 3 |
| 3 | 161ME32 | Engineering Thermodynamics | PC | 3-0-0 | 3 |
| 4 | 161ME33 | Engineering Materials and Metallurgy | PC | 3-0-0 | 3 |
| 5 | 161ME34 | Kinematics of Machinery | PC | 3-2-0 | 4 |
| 6 | 161ME35 | Electrical Drives and Controls | ES | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161ME37 | Manufacturing Technology Laboratory | PC | 0-0-3 | 2 |
| 8 | 161ME38 | Electrical Engineering Laboratory | ES | 0-0-3 | 2 |
| 9 | 161HS39 | Functional English – I | EEC | 0-0-2 | - |
| No. of Credits: | | | | | 24 |

SEMESTER – IV

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|---------------|---------|----------------------------------|----------|-------|---|
| Theory | | | | | |
| 1 | 161MA42 | Statistics and Numerical Methods | BS | 2-2-0 | 3 |

| | | | | | |
|------------------------|---------|---|-----|-------|-----------|
| 2 | 161ME41 | Fluid Mechanics and Machinery | PC | 3-2-0 | 4 |
| 3 | 161ME42 | Engineering Metrology and Measurements | PC | 3-0-0 | 3 |
| 4 | 161ME43 | Mechanics of Materials | PC | 3-2-0 | 4 |
| 5 | 161ME44 | Modern Machining Processes | PC | 3-0-0 | 3 |
| 6 | 161ME45 | Electronics Engineering | ES | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161ME47 | Material Testing and Fluid Mechanics Laboratory | PC | 0-0-3 | 2 |
| 8 | 161ME48 | Metrology and Measurements Laboratory | PC | 0-0-3 | 2 |
| 9 | 161HS49 | Functional English – II | EEC | 0-0-2 | - |
| No. of Credits: | | | | | 24 |

SEMESTER – V

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|-----------------------------------|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161ME51 | CAD/CAM/CAE | PC | 3-0-0 | 3 |
| 2 | 161ME52 | Dynamics of Machinery | PC | 3-2-0 | 4 |
| 3 | 161ME53 | Machine Design and Drawing | PC | 3-0-2 | 4 |
| 4 | 161ME54 | Thermal Engineering | PC | 2-2-0 | 3 |
| 5 | 161ME55 | Automobile Engineering | PC | 3-0-0 | 3 |
| 6 | 161ME56 | Applied Hydraulics and Pneumatics | PC | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161ME57 | Thermal Engineering Laboratory | PC | 0-0-3 | 2 |
| 8 | 161ME58 | Dynamics Laboratory | PC | 0-0-3 | 2 |
| 9 | 161HS59 | Career English – I | EEC | 0-0-2 | - |
| No. of Credits: | | | | | 24 |

SEMESTER – VI

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|--------------------------------------|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161HS61 | Engineering Economics and Management | HS | 3-0-0 | 3 |
| 2 | 161ME61 | Heat and Mass Transfer | PC | 3-0-2 | 4 |
| 3 | 161ME62 | Finite Element Analysis | PC | 3-2-0 | 4 |
| 4 | 161ME63 | Design of Transmission Systems | PC | 2-2-0 | 3 |
| 5 | E1 | Elective –I | PE | 3-0-0 | 3 |
| 6 | E2 | Elective –II | OE / PE | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161ME67 | CAD/CAM Laboratory | PC | 0-0-3 | 2 |
| 8 | 161ME68 | Design and Fabrication Project | EEC | 0-0-3 | 2 |
| 9 | 161HS69 | Career English – II | EEC | 0-0-2 | - |
| No. of Credits: | | | | | 24 |

SEMESTER – VII

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|------------------------|---------|---|----------|-------|-----------|
| Theory | | | | | |
| 1 | 161ME71 | Total Quality Management | PC | 3-0-0 | 3 |
| 2 | 161ME72 | Mechatronics | PC | 3-0-0 | 3 |
| 3 | 161ME73 | Gas Dynamics and Jet Propulsion | PC | 2-2-0 | 3 |
| 4 | 161ME74 | Power Plant Engineering | PC | 3-0-0 | 3 |
| 5 | E3 | Elective – III | PE | 3-0-0 | 3 |
| 6 | E4 | Elective – IV | OE/PE | 3-0-0 | 3 |
| Practical | | | | | |
| 7 | 161ME77 | Computer Aided Simulation & Analysis Laboratory | PC | 0-0-3 | 2 |
| 8 | 161ME78 | Mechatronics Laboratory | PC | 0-0-3 | 2 |
| No. of Credits: | | | | | 22 |

UG Regulations 2016

SEMESTER – VIII

| Sl. No. | Code | Course Title | Category | L-T-P | C |
|---------------|------|--------------|----------|-------|---|
| Theory | | | | | |

P.S.R. Engineering College

| | | | | | |
|------------------------|---------|---------------|-------|--------|-----------|
| 1 | E5 | Elective – V | PE | 3-0-0 | 3 |
| 2 | E6 | Elective – VI | OE/PE | 3-0-0 | 3 |
| Practical | | | | | |
| 3 | 161ME87 | Project Work | EEC | 0-0-12 | 6 |
| No. of Credits: | | | | | 12 |

List of Electives

| Programme Electives | | | | | |
|----------------------------|----------|--|----------|-------|--------|
| Sl. No. | Code | Course Title | Category | L-T-P | Credit |
| 1 | 161MEE01 | Advanced I.C. Engines | PE | 3-0-0 | 3 |
| 2 | 161MEE02 | Composite Materials and Engineering | PE | 3-0-0 | 3 |
| 3 | 161MEE03 | Computational Fluid Dynamics | PE | 3-0-0 | 3 |
| 4 | 161MEE04 | Computer Integrated Manufacturing | PE | 3-0-0 | 3 |
| 5 | 161MEE05 | Design of Jigs, Fixtures and Press Tools | PE | 3-0-0 | 3 |
| 6 | 161MEE06 | Fireworks Safety | PE | 3-0-0 | 3 |
| 7 | 161MEE07 | Foundry Technology | PE | 3-0-0 | 3 |
| 8 | 161MEE08 | Fundamentals of Nano Technology | PE | 3-0-0 | 3 |
| 9 | 161MEE09 | Industrial Engineering & Management | PE | 3-0-0 | 3 |
| 10 | 161MEE10 | Nuclear Engineering | PE | 3-0-0 | 3 |
| 11 | 161MEE11 | Polymer Technology | PE | 3-0-0 | 3 |
| 12 | 161MEE12 | Process Planning and Cost Estimation | PE | 3-0-0 | 3 |
| 13 | 161MEE13 | Production Planning and Control | PE | 3-0-0 | 3 |
| 14 | 161MEE14 | Rapid Prototyping | PE | 3-0-0 | 3 |
| 15 | 161MEE15 | Refrigeration and Air Conditioning | PE | 3-0-0 | 3 |
| 16 | 161MEE16 | Welding Technology | PE | 3-0-0 | 3 |
| 17 | 161MEE17 | Additive Manufacturing | PE | 3-0-0 | 3 |

List of Open Electives

Offered by Department of Computer Science and Engineering

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|------------------------------|----------|-------|--------|
| 1 | 161OE101 | Web development using PHP | OE | 3-0-0 | 3 |
| 2 | 161OE102 | Programming in PERL | OE | 3-0-0 | 3 |
| 3 | 161OE103 | Multimedia & Animation Tools | OE | 3-0-0 | 3 |
| 4 | 161OE104 | Multicore Architecture | OE | 3-0-0 | 3 |
| 5 | 161OE105 | Green Computing | OE | 3-0-0 | 3 |
| 6 | 161OE106 | Soft Computing | OE | 3-0-0 | 3 |
| 7 | 161OE107 | Java Scripts | OE | 3-0-0 | 3 |

Offered by Department of Electronics and Communication Engineering

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|--|----------|-------|--------|
| 1 | 161OE201 | Bio Medical Instrumentation | OE | 3-0-0 | 3 |
| 2 | 161OE202 | Digital Image Processing | OE | 3-0-0 | 3 |
| 3 | 161OE203 | Consumer Electronics | OE | 3-0-0 | 3 |
| 4 | 161OE204 | Multimedia Compression and Communication | OE | 3-0-0 | 3 |
| 5 | 161OE205 | High Speed Networks | OE | 3-0-0 | 3 |

Offered by Department of Electrical and Electronics Engineering

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|---|----------|-------|--------|
| 1 | 161OE401 | Energy audit and conservation | OE | 3-0-0 | 3 |
| 2 | 161OE402 | Principles of Virtual Instrumentation | OE | 3-0-0 | 3 |
| 3 | 161OE403 | Sensors and Transducers | OE | 3-0-0 | 3 |
| 4 | 161OE404 | Aircraft electronic system | OE | 3-0-0 | 3 |
| 5 | 161OE405 | Electrical safety | OE | 3-0-0 | 3 |
| 6 | 161OE406 | Vehicle electric power Systems | OE | 3-0-0 | 3 |
| 7 | 161OE407 | Domestic and Industrial Electrical Installation | OE | 3-0-0 | 3 |

Offered by Department of Bio Technology

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|------------------------------------|----------|-------|--------|
| 1 | 161OE501 | Process Equipment and Plant Design | OE | 3-0-0 | 3 |
| 2 | 161OE502 | Biomaterials | OE | 3-0-0 | 3 |

| | | | | | |
|---|----------|-----------------------------|----|-------|---|
| 3 | 161OE503 | Biosensors | OE | 3-0-0 | 3 |
| 4 | 161OE504 | Food Science and Technology | OE | 3-0-0 | 3 |

Offered by Department of Mechanical Engineering

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|---------------------------------------|----------|-------|--------|
| 1 | 161OE601 | Maintenance Engineering | OE | 3-0-0 | 3 |
| 2 | 161OE602 | Non Destructive Testing and Materials | OE | 3-0-0 | 3 |
| 3 | 161OE603 | Operations Research | OE | 3-0-0 | 3 |
| 4 | 161OE604 | Renewable Sources of Energy | OE | 3-0-0 | 3 |
| 5 | 161OE605 | Robotics | OE | 3-0-0 | 3 |

Offered by Department of Civil Engineering

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|--|----------|-------|--------|
| 1 | 161OE701 | Disaster Management System | OE | 3-0-0 | 3 |
| 2 | 161OE702 | Fundamentals of Fire Safety Engineering | OE | 3-0-0 | 3 |
| 3 | 161OE703 | Optimization in Engineering | OE | 3-0-0 | 3 |
| 4 | 161OE704 | Renewable Energy Sources | OE | 3-0-0 | 3 |
| 5 | 161OE705 | Environmental Impact and Risk Assessment | OE | 3-0-0 | 3 |
| 6 | 161OE706 | Environment and Ecology | OE | 3-0-0 | 3 |
| 7 | 161OE707 | Technology Management | OE | 3-0-0 | 3 |
| 8 | 161OE708 | Sustainable Management of Urban Ecology | OE | 3-0-0 | 3 |

Offered by Department of Management Studies

| Sl. No. | Course Code | Name of the Course | Category | L-T-P | Credit |
|---------|-------------|------------------------------------|----------|-------|--------|
| 1 | 161OE801 | Essentials of Management | OE | 3-0-0 | 3 |
| 2 | 161OE802 | Fundamentals of Marketing | OE | 3-0-0 | 3 |
| 3 | 161OE803 | Managing Human Resources | OE | 3-0-0 | 3 |
| 4 | 161OE804 | Professional Ethics in Engineering | OE | 3-0-0 | 3 |

MASTER OF BUSINESS ADMINISTRATION

REGULATIONS, CURRICULUM AND SYLLABUS

(I TO IV SEMESTERS)

SEMESTER – I

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|--------|----------|-------------------------------------|----------|-------|-----------|
| 1 | 163BA11 | Principles of Management | FC | 3-0-0 | 3 |
| 2 | 163BA12 | Business Statistics and Probability | FC | 3-1-0 | 4 |
| 3 | 163BA13 | Managerial Economics | FC | 3-0-0 | 3 |
| 4 | 163BA14 | Organizational Behavior | FC | 3-0-0 | 3 |
| 5 | 163BA15 | Accounting for Management | FC | 3-1-0 | 4 |
| 6 | 163BA16 | Legal Aspects of Business | FC | 3-0-0 | 3 |
| 7 | 163BA17 | Business Application Software - I | EEC | 0-0-4 | 2 |
| 8 | 163BA18 | Seminar I – Executive Communication | EEC | 0-0-2 | 1 |
| | | Total | | | 23 |

SEMESTER – II

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|--------|----------|-----------------------|----------|-------|---|
| 1 | 163BA21 | Operations Management | PC | 3-0-0 | 3 |
| 2 | 163BA22 | Financial Management | PC | 3-0-0 | 3 |

| | | | | | |
|---|---------|--|-----|-------|-----------|
| 3 | 163BA23 | Marketing Management | PC | 3-0-0 | 3 |
| 4 | 163BA24 | Human Resource Management | PC | 3-0-0 | 3 |
| 5 | 163BA25 | Management Information System | PC | 3-0-0 | 3 |
| 6 | 163BA26 | Applied Operations Research for Management | PC | 3-1-0 | 4 |
| 7 | 163BA27 | Business Research Methods Laboratory | EEC | 0-0-4 | 2 |
| 8 | 163BA28 | Seminar II – Business Environment | EEC | 0-0-2 | 1 |
| | | Total | | | 22 |

SEMESTER – III

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|--------|----------|---------------------------------------|----------|-------|-----------|
| 1 | 163BA** | Elective I | PE | 3-0-0 | 3 |
| 2 | 163BA** | Elective II | PE | 3-0-0 | 3 |
| 3 | 163BA** | Elective III | PE | 3-0-0 | 3 |
| 4 | 163BA** | Elective IV | PE | 3-0-0 | 3 |
| 5 | 163BA** | Elective V | PE | 3-0-0 | 3 |
| 6 | 163BA** | Elective VI | PE | 3-0-0 | 3 |
| 7 | 163BA31 | Summer Project Work | EEC | 0-0-6 | 4 |
| 8 | 163BA32 | Seminar III– Total Quality Management | EEC | 0-0-2 | 1 |
| | | Total | | | 23 |

SEMESTER – IV

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|--------|----------|-----------------------------------|----------|--------|-----------|
| 1 | 163BA41 | International Business Management | PC | 3-0-0 | 3 |
| 2 | 163BA42 | Strategic Management | PC | 3-0-0 | 3 |
| 3 | 163BA43 | Project Work | EEC | 0-0-32 | 16 |
| | | Total | | | 22 |

**LIST OF PROGRAM ELECTIVES
MASTER OF BUSINESS ADMINISTRATION (MBA)**

| S. No. | Code No. | Course Title | Category | L-T-P | C |
|-----------------------------------|----------|---|----------|-------|---|
| MARKETING – ELECTIVES | | | | | |
| 1 | 163BAM1 | Retail Management | PE | 3-0-0 | 3 |
| 2 | 163BAM2 | Services Marketing | PE | 3-0-0 | 3 |
| 3 | 163BAM3 | Consumer Behaviour | PE | 3-0-0 | 3 |
| 4 | 163BAM4 | Integrated Marketing Communication | PE | 3-0-0 | 3 |
| 5 | 163BAM5 | Rural Marketing | PE | 3-0-0 | 3 |
| FINANCE – ELECTIVES | | | | | |
| 1 | 163BAF1 | Security Analysis and Portfolio Management | PE | 3-0-0 | 3 |
| 2 | 163BAF2 | Merchant Banking and Financial Services | PE | 3-0-0 | 3 |
| 3 | 163BAF3 | International Trade Finance | PE | 3-0-0 | 3 |
| 4 | 163BAF4 | Corporate Finance | PE | 3-0-0 | 3 |
| 5 | 163BAF5 | Risk Management and Insurance | PE | 3-0-0 | 3 |
| HUMAN RESOURCE – ELECTIVES | | | | | |
| 1 | 163BAH1 | Managerial Behavior and Effectiveness | PE | 3-0-0 | 3 |
| 2 | 163BAH4 | Labour Legislations | PE | 3-0-0 | 3 |
| 3 | 163BAH5 | Strategic Human Resource Management & Development | OE | 3-0-0 | 3 |
| 4 | 163BAO3 | Advanced Industrial Psychology | PE | 3-0-0 | 3 |
| PRODUCTION – ELECTIVES | | | | | |
| 1 | 163BAP1 | Supply Chain Management | PE | 3-0-0 | 3 |
| 2 | 163BAP2 | Logistics Management | PE | 3-0-0 | 3 |
| 3 | 163BAP3 | Lean Six Sigma | PE | 3-0-0 | 3 |

| HOSPITAL MANAGEMENT – ELECTIVES | | | | | |
|--|----------|--|----|-------|---|
| 1 | 163BAHO1 | Public Health Care System & Health Insurance | PE | 3-0-0 | 3 |
| 2 | 163BAHO2 | Legal and Ethical Issues For Hospitals | PE | 3-0-0 | 3 |
| 3 | 163BAHO3 | Medical & Health System Management | PE | 3-0-0 | 3 |

| Course Code | Course Name | Credits |
|--------------------|------------------------------------|----------------|
| 163OE804 | PROFESSIONAL ETHICS IN ENGINEERING | 3 |
| 163OE803 | MANAGING HUMAN RESOURCES | 3 |

163OE803

MANAGING HUMAN RESOURCES**L-T-P****C****3-0-0****3****Programme:** COMMON TO ALL BRANCHES**Sem:****Category:****OE**

Aim: To prepare students to gain knowledge in the field of human resource management and enabling them to understand the human resource functions and practices in organization for improved performance and help create a transparent organizational culture.

Course Outcomes:

The students will be able to

CO1. Gather knowledge and understand Primary HRM Framework and its concepts.

CO2. Gain knowledge of the best practices of business ethical standards and organizational code of conduct.

CO3. Understanding of functional knowledge of the following processes such as Recruitment and selection, Job analysis and design, HR planning, Organizational development and training, Compensation and protection, Performance appraisals and career planning, Payroll management, Skills management and Succession Planning.

CO4. Understanding the key skills that is required by today's HR professionals and to enable students to effectively contribute to dynamic organizations.

UNDERSTANDING HUMAN RESOURCE MANAGEMENT**9**

Evolution of human resource management – The importance of the human factor – Objectives of human resource management – Framework of HRM - Role of human resource manager – HR Policies – Human Resource Information System (HRIS) – Human resource accounting and audit.

THE CONCEPT OF BEST FIT EMPLOYEE**9**

Importance of Human Resource Planning – Demand and Supply Forecasting – Recruitment - Introduction – Importance – Practices – Selection process - Screening – Tests - Validation – Interview - Medical examination – orientation.

TRAINING AND EXECUTIVE DEVELOPMENT**9**

Training – Purpose – Methods – Benefits - Executive Development Programmes – Common practices – Benefits

SUSTAINING EMPLOYEE INTEREST**9**

Compensation – Reward – Motivation – Definition - Types – Theories of motivation – Motivational factors – Career definition - Types – Career Planning - Career Management – Career Development Models.

PERFORMANCE EVALUATION AND CONTROL PROCESS**9**

Method of performance evaluation – Feedback – Promotion – Demotion - Transfer and Separation – The control process – Importance – Methods – Requirements of effective control systems - Grievances – Causes – Implications – Redressal methods.

Total Periods: 45**Text Books:**

1. Decenzo and Robbins, Human Resource Management, Wiley, 8th Edition, 2014.
2. Dessler Human Resource Management, Pearson Education Limited, 2013.

References:

1. Luis R. Gomez-Mejia, David B. Balkin, Robert L Cardy, Managing Human Resource, PHI Learning, 2012.
2. Bernadin, Human Resource Management, Tata Mcgraw Hill, 8th edition 2012.
3. Uday Kumar Haldar, Juthika Sarkar, Human Resource management, Oxford, 2012.
4. Wayne Cascio, Managing Human Resource, McGraw Hill, 2013.

| Course Outcomes | Program Outcomes (POs) | | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | | |
|-----------------|------------------------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|----------------------------------|-------|-------|-------|
| | PO 1 | PO 2 | PO 3 | PO 4 | PO 5 | PO 6 | PO 7 | PO 8 | PO 9 | PO1 0 | PO1 1 | PO1 2 | PO1 3 | PSO 1 | PSO 2 | PSO 3 | PSO 4 |
| CO1 | 3 | 2 | | 3 | | | | 3 | | 3 | | 2 | 3 | 2 | | | |
| CO2 | 3 | | | 2 | 3 | | | | 2 | | | | | | 2 | | 2 |
| CO3 | 3 | 2 | | | | | | 3 | | | | 2 | | 2 | | 2 | |
| CO4 | 3 | | | | 2 | | | 3 | | | | 2 | | | 3 | | 2 |

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)

163OE80
4

PROFESSIONAL ETHICS IN ENGINEERING

L-T-P C

3-0-0 3

Program me: COMMON TO ALL BRANCHES

Sem:

Category

OE

Aim: To have experience with the day-to-day problems and their allied alternative decision making towards social and professional environment.

Course Outcomes:

The students will be able to

CO1. Identifying the core values that shape the ethical behavior of an engineer.

CO2. Enhancing familiarity with codes of conduct, and to instill Moral and Social Values and Loyalty and to appreciate the rights of others

CO3. To become aware of ethical concerns and conflicts

CO4. Increasing the ability to recognize and resolve ethical dilemmas.

HUMAN VALUES

9

Morals, values and Ethics – Integrity – Work ethic – Service learning – Civic virtue – Respect for others – Living peacefully – Caring – Sharing – Honesty – Courage – Valuing time – Cooperation – Commitment – Empathy – Self confidence – Character – Spirituality – Introduction to Yoga and meditation for professional excellence and stress management.

ENGINEERING ETHICS

9

Senses of „Engineering Ethics“ – Variety of moral issues – Types of inquiry – Moral dilemmas – Moral Autonomy – Kohlberg’s theory – Gilligan’s theory – Consensus and Controversy – Models of professional roles – Theories about right action – Self-interest – Customs and Religion – Uses of Ethical Theories

ENGINEERING AS SOCIAL EXPERIMENTATION

9

Engineering as Experimentation – Engineers as responsible Experimenters – Codes of Ethics – A Balanced Outlook on Law.

SAFETY, RESPONSIBILITIES AND RIGHTS

9

Safety and Risk – Assessment of Safety and Risk – Risk Benefit Analysis and Reducing Risk – Respect for Authority – Collective Bargaining – Confidentiality – Conflicts of Interest – Occupational Crime – Professional Rights – Employee Rights – Intellectual Property Rights (IPR) – Copy rights – Patents – Trade marks.

GLOBAL ISSUES

9

Multinational Corporations – Environmental Ethics – Computer Ethics – Weapons Development – Engineers as Managers – Consulting Engineers – Engineers as Expert Witnesses and Advisors – Moral Leadership – Code of Conduct – Corporate Social Responsibility.

Total Periods: 45

Text Books:

1. Mike Martin and Roland Schinzinger, “Ethics in Engineering”, McGraw Hill, New York, 2012.
2. Charles E Harris, Michael S Pritchard and Michael J Rabins, “Engineering Ethics – Concepts and Cases”, 6th Edition, Ray James, Elian Englehardt Wadsworth publishing co, 2013.

References:

1. Charles D Fleddermann, “Engineering Ethics”, Prentice Hall, New Mexico, 2012.
2. John R Boatright, “Ethics and the Conduct of Business”, Pearson Education, 2013.
3. Edmund G Seebauer and Robert L Barry, “Fundamentals of Ethics for Scientists and Engineers”, Oxford University Press, 2013.
4. David Erman & Michele Shauf, “Computers, Ethics and Society”, Oxford University Press, 2012.

| Course Outcomes | Program Outcomes (POs) | | | | | | | | | | | | | Program Specific Outcomes (PSOs) | | | |
|-----------------|------------------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|------|----------------------------------|------|------|------|
| | PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PO13 | PSO1 | PSO2 | PSO3 | PSO4 |
| CO1 | | 2 | | 2 | 3 | 2 | | | | 2 | | | | 2 | | | 2 |
| CO2 | 2 | 3 | | 2 | 3 | | | 2 | | | | | | | 2 | | |
| CO3 | 3 | 2 | | | 3 | | | | | | | | | 2 | | 2 | |
| CO4 | | | | | 3 | | | 2 | | 2 | | | | | 2 | | 3 |

1: Slight (Low) 2: Moderate (Medium) 3: Substantial (High)