

Annamacharya Institute of Technology and Sciences, Tirupati
Course structure for Four Year Regular B.Tech. Degree Program
(Effective for the batches admitted from 2019-20)

CIVIL ENGINEERING (CE)

I B. Tech – I Semester

INDUCTION PROGRAM (3 weeks duration)

- ❖ Physical activity
- ❖ Creative Arts
- ❖ Universal Human Values
- ❖ Literary
- ❖ Proficiency Modules
- ❖ Lectures by Eminent People
- ❖ Visits to local Areas
- ❖ Familiarization to Dept./Branch & Innovations

I B. Tech – I Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|----------|-------------|-------------------------------------|----------------|---|---|-------------|------------------------------------|------------|------------|
| | | | | L | T | P | | CIE | SEE | Total |
| THEORY | | | | | | | | | | |
| 1 | BSC | 19ABS9901 | Algebra and calculus | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | BSC | 19ABS9903 | Engineering Physics | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 3 | ESC | 19AES0501 | Problem solving and programming | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 4 | HSC | 19AHS9901 | Communicative English-I | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| PRACTICAL | | | | | | | | | | |
| 5 | BSC | 19ABS9908 | Engineering Physics Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 6 | ESC | 19AES0503 | Problem solving and programming Lab | 0 | 0 | 4 | 2 | 30 | 70 | 100 |
| 7 | HSC | 19AHS9902 | Communicative English-I Lab | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 8 | LC | 19ALC0301 | Engineering Workshop | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| Total | | | | | | | 18.5 | 240 | 560 | 800 |

I B. Tech – II Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|----------|-------------|---|----------------|---|---|---------|------------------------------------|-----|-------|
| | | | | L | T | P | | CIE | SEE | Total |
| THEORY | | | | | | | | | | |
| 1 | BSC | 19ABS9906 | Differential Equations and Vector Calculus | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | BSC | 19ABS9905 | Engineering Chemistry | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 3 | ESC | 19AES0202 | Basics of Electrical and Electronics Engineering-I | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | ESC | 19AES0502 | Data Structures | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| PRACTICAL | | | | | | | | | | |
| 5 | ESC | 19AES0301 | Engineering Graphics Lab | 1 | 0 | 4 | 3 | 30 | 70 | 100 |
| 6 | BSC | 19ABS9910 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 7 | ESC | 19AES0204 | Basics of Electrical and Electronics Engineering -I Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 8 | ESC | 19AES0504 | Data Structures Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 9 | LC | 19ALC0101 | Civil Engineering Workshop | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| Total | | | | | | | 21.5 | 270 | 630 | 900 |

II B. Tech –I Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|----------|-------------|---|----------------|---|---|---------|------------------------------------|-----|-------|
| | | | | L | T | P | | CIE | SEE | Total |
| THEORY | | | | | | | | | | |
| 1 | BSC | 19ABS9913 | Probability & Statistics, PDE and Complex Variables | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | HSC | 19AHS9903 | Communicative English II | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 3 | PCC | 19APC0101 | Mechanics of Materials | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | PCC | 19APC0102 | Surveying | 4 | 0 | 0 | 4 | 30 | 70 | 100 |
| 5 | PCC | 19APC0103 | Fluid Mechanics | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | PCC | 19APC0104 | Building Materials and Construction | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 7 | MC | 19AMC9901 | Biology for Engineers | 2 | - | - | - | 30 | - | 30 |
| PRACTICAL | | | | | | | | | | |
| 8 | HSC | 19AHS9904 | Communicative English Lab II | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 9 | PCC | 19APC0105 | Strength of Materials Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 10 | PCC | 19APC0106 | Surveying Lab | 0 | 0 | 4 | 2.0 | 30 | 70 | 100 |
| TOTAL | | | | | | | 21.5 | 300 | 630 | 930 |

II B. Tech – II Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|----------|-------------|---|----------------|---|---|---------|------------------------------------|-----|-------|
| | | | | L | T | P | | CIE | SEE | Total |
| THEORY | | | | | | | | | | |
| 1 | BSC | 19ABS9915 | Transform Techniques and Numerical Methods | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | ESC | 19AES0509 | Basics of Python Programming | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 3 | PCC | 19APC0107 | Strength of Materials | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | PCC | 19APC0108 | Hydraulic Engineering | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | PCC | 19APC0109 | Structural Analysis – I | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 6 | PCC | 19APC0110 | Concrete Technology | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 7 | MC | 19AMC9903 | Environmental Studies | 2 | - | - | - | 30 | - | 30 |
| PRACTICAL | | | | | | | | | | |
| 8 | ESC | 19AES0510 | Basics of Python Programming Lab | 0 | 0 | 2 | 1.0 | 30 | 70 | 100 |
| 9 | PCC | 19APC0111 | Fluid Mechanics and Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| | PCC | 19APC0112 | Concrete Technology Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 11 | PRC | 19APR0101 | Socially Relevant Project (15 Hrs/Sem) | 0 | 0 | 1 | 0.5 | 50 | - | 50 |
| TOTAL | | | | | | | 21.5 | 350 | 630 | 980 |

III B. Tech – I Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|------------------------|-------------|---|----------------|---|---|---------|------------------------------------|-----|-------|
| | | | | L | T | P | | CI | SE | Total |
| THEORY | | | | | | | | | | |
| 1 | PCC | 19APC0113 | Soil Mechanics | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 2 | PCC | 19APC0114 | Design of Reinforced Concrete Structures | 3 | 1 | 0 | 4 | 30 | 70 | 100 |
| 3 | PCC | 19APC0115 | Engineering Geology | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 4 | PCC | 19APC0116 | Structural Analysis –II | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 5 | PEC | | Professional Elective I | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| | | 19APE0101 | Building Planning and bye-laws | | | | | | | |
| | | 19APE0102 | Water Harvesting and Conservation | | | | | | | |
| | | 19APE0103 | Cost Effective Housing Techniques | | | | | | | |
| | | 19APE0104 | Green Buildings | | | | | | | |
| 19APE0105 | Photogrammetric Survey | | | | | | | | | |
| 6 | OEC | | Open Elective I (Inter Disciplinary Elective I) | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| | | 19APE0416 | Sensor Networks | | | | | | | |
| | | 19APC0521 | Artificial Intelligence | | | | | | | |
| | | 19APC0323 | Operations Research | | | | | | | |
| 7 | MC | 19AMC9904 | Professional Ethics and Human values | 2 | - | - | - | 30 | - | 30 |
| PRACTICAL | | | | | | | | | | |
| 8 | PCC | 19APC0117 | Soil Mechanics Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 9 | PCC | 19APC0118 | Computer-aided Civil Engineering Drawing Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 10 | PEC | 19APC0119 | Engineering Geology Lab | 0 | 0 | 2 | 1 | 30 | 70 | 100 |
| 11 | PRC | 19APR0102 | Socially Relevant Projects (15Hrs/Sem) | 0 | 0 | 1 | 0.5 | 50 | - | 50 |
| TOTAL | | | | | | | 21.5 | 350 | 630 | 980 |

III B. Tech – II Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|------------------------|-------------|--|----------------|---|---|---------|------------------------------------|-----|-------|
| | | | | L | T | P | | CIE | SEE | Total |
| THEORY | | | | | | | | | | |
| 1 | PCC | 19APC0120 | Foundation Engineering | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | PCC | 19APC0121 | Transportation Engineering | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 3 | PCC | 19APC0122 | Remote Sensing and GIS | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | PEC | | Professional Elective II | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| | | 19APE0106 | Subsurface Investigation and Instrumentation | | | | | | | |
| | | 19APE0107 | Prestressed Concrete | | | | | | | |
| | | 19APE0108 | Advanced Structural Analysis | | | | | | | |
| | | 19APE0109 | Railways, Airport, Docks & Harbor Engineering | | | | | | | |
| 19APE0110 | Finite Element Methods | | | | | | | | | |
| 5 | OEC | | Open Elective II (Inter Disciplinary Elective II) | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| | | 19AHSMB01 | Managerial Economics and Financial Analysis | | | | | | | |
| | | 19AOE0301 | Management Science | | | | | | | |
| | | 19AHSMB02 | Entrepreneurship Development | | | | | | | |
| 6 | HSC | | Humanities Elective I | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| | | 19AOE9901 | English for Research writing skills | | | | | | | |
| | | 19AHE9911 | Environmental waste Management | | | | | | | |
| | | 19AHE9902 | Principles of Effective Public Speaking | | | | | | | |
| 7 | MC | 19AMC9902 | Constitution of India | 2 | | | | 30 | | 30 |
| PRACTICAL | | | | | | | | | | |
| 8 | PCC | 19APC0123 | Remote Sensing and GIS Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 9 | PCC | 19APC0124 | Transportation Engineering lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 10 | PRC | 19APR0104 | Industrial Training/ Internship/Research Projects in National Laboratories/Academic Institutions * | 0 | 0 | 0 | 0 | - | - | - |
| 11 | PRC | 19APR0103 | Socially Relevant Projects (15 hrs / semester) | 0 | 0 | 1 | 0.5 | 50 | - | 50 |
| TOTAL | | | | | | | 21.5 | 350 | 630 | 880 |

IV B. Tech – I Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------|--|-------------|--|----------------|---|---|---------|------------------------------------|------|-------|
| | | | | L | T | P | | CI E | SE E | Total |
| THEORY | | | | | | | | | | |
| 1 | PCC | 19APC0125 | Estimation, Costing and Valuation | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 2 | PCC | 19APC0126 | Design and Drawing of Steel Structures | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 3 | PCC | 19APC0127 | Environmental Engineering | 3 | 0 | 0 | 3 | 30 | 70 | 100 |
| 4 | PCC | 19APC0128 | Hydrology and water resources engineering | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| 5 | PEC | | Professional Elective III | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| | | 19APE0111 | Ground Improvement Techniques | | | | | | | |
| | | 19APE0112 | Watershed and River Basin Management | | | | | | | |
| | | 19APE0113 | Engineering Materials for Sustainability | | | | | | | |
| | | 19APE0114 | Air pollution and quality control | | | | | | | |
| 19APE0115 | Bridge Engineering | | | | | | | | | |
| 6 | PEC | | Professional Elective IV | 2 | 0 | 0 | 2 | 30 | 70 | 100 |
| | | 19APE0116 | Repairs and Rehabilitation of Structures | | | | | | | |
| | | 19APE0117 | Intelligent transportation systems | | | | | | | |
| | | 19APE0118 | Hydro Power Engineering | | | | | | | |
| | | 19APE0119 | Industrial Waste & Waste-Water Engineering | | | | | | | |
| 19APE0120 | Construction Technology and Project Management | | | | | | | | | |
| PRACTICAL | | | | | | | | | | |
| 7 | PCC | 19APC0129 | Structural Design and Drawing Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 8 | PCC | 19APC0130 | Environmental Engineering Lab | 0 | 0 | 3 | 1.5 | 30 | 70 | 100 |
| 9 | PRC | 19APR0105 | Socially Relevant Projects (15 hrs / semester) | 0 | 0 | 1 | 0.5 | 50 | - | 50 |
| 10 | PRC | 19APR0106 | Survey Camp/ Industrial Training/Internship/Research Projects in National Laboratories/Academic Institutions | 0 | 0 | 1 | 0.5 | 50 | - | 50 |
| TOTAL | | | | | | | 19.0 | 340 | 560 | 900 |

IV B. Tech – II Semester

| S.No | Category | Course Code | Course Title | Hours per week | | | Credits | Scheme of Examination (Max. Marks) | | |
|------------------------------|----------|-------------|---------------------------------|----------------|---|----|-----------|------------------------------------|------------|------------|
| | | | | L | T | P | | CIE | SEE | Total |
| 1 | OEC | OEC | Open Elective III | 3 | 0 | 0 | 3 | | | 100 |
| | | | Basic research | | | | | | | |
| | | | Research in technical education | | | | | | | |
| | | | Research Ethics and Plagiarism | | | | | | | |
| | | | Personality development | | | | | | | |
| Entrepreneurship development | | | | | | | | | | |
| 2 | PEC | PEC | Professional Elective V | 3 | 0 | 0 | 3 | | | 100 |
| | | | Project planning and control | | | | | | | |
| | | | Natural Hazards | | | | | | | |
| | | | Plastic waste management | | | | | | | |
| | | | River engineering | | | | | | | |
| Safety in construction | | | | | | | | | | |
| 3 | PRC | 19APR0107 | Technical Seminar | 0 | 0 | 0 | 0 | 50 | 0 | 50 |
| 4 | PRC | 19APR0108 | Project | 0 | 0 | 14 | 9 | 60 | 140 | 200 |
| TOTAL | | | | | | | 15 | 110 | 140 | 450 |