**1.1.3 –** Number of courses focusing on employability/entrepreneurship/ skill development offered by the Institution during the year

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(AUTONOMOUS INSTITUTION UNDER UGC, NEW DELHI)**
**ACCREDITED BY NBA & NAAC**
**APPROVED BY AICTE, NEW DELHI,**
**AFFILIATED TO JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD**
**SHERIGUDA(V), IBRAHIMPATNAM(M), R.R.DIST. – 501 510. TELANGANA**

# Department of Civil Engineering

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CIVIL ENGINEERING

**(Common to ME & CIVIL)**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EPH1101 | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EPH11L1 | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 8 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| | | **Total Credits** | **13** | **3** | **10** | **18** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | **3** | **1** | **0** | **4** |
| 2 | R20ECH1101 | Chemistry | **3** | **1** | **0** | **4** |
| 3 | R20MED1103 | Engineering Mechanics | **3** | **1** | **0** | **4** |
| 4 | R20MED1101 | Engineering Workshop | **1** | **0** | **3** | **2.5** |
| 5 | R20HAS1101 | English | **2** | **0** | **0** | **2** |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | **0** | **0** | **3** | **1.5** |
| 7 | R20HAS11L2 | English Language and Communication Skills Lab | **0** | **0** | **2** | **1** |
| 8 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 9 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **3** | **8** | **19** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. CIVIL ENGINEERING**

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV2101 | Surveying & Geomatics | 3 | 0 | 0 | 3 |
| 2 | R20MED2105 | Hydraulics and Hydraulic Machinery | 3 | 0 | 0 | 3 |
| 3 | R20CIV2102 | Strength of Materials-I | 3 | 0 | 0 | 3 |
| 4 | R20MTH2101 | Probability Distributions and Statistical Methods | 3 | 1 | 0 | 4 |
| 5 | R20MED2106 | Fluid Mechanics | 3 | 0 | 0 | 3 |
| 6 | R20CIV21L1 | Surveying Lab | 1 | 0 | 3 | 2 |
| 7 | R20CIV21L2 | Strength of Materials Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20MED21L4 | Hydraulics & Hydraulic Machinery Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20MAC2100 | Gender Sensitization Lab (An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **16** | **1** | **11** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S.No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20EEE2204 | Basics of Electrical & Electronics Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CIV2201 | Building Materials, Construction and Planning | 3 | 0 | 0 | 3 |
| 3 | R20CIV2202 | Strength of Materials-II | 3 | 1 | 0 | 4 |
| 4 | R20CIV2203 | Structural Analysis -I | 3 | 1 | 0 | 4 |
| 5 | R20CIV2204 | Engineering Geology | 3 | 0 | 0 | 3 |
| 6 | R20CIV22L1 | Computer aided Civil Engineering Drawing | 0 | 0 | 3 | 1.5 |
| 7 | R20CIV22L2 | Engineering Geology lab | 0 | 0 | 3 | 1.5 |
| 8 | R20EEE22L3 | Electrical & Electronics Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **2** | **8** | **21** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. CIVIL ENGINEERING**

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P/D | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3101 | Structural Analysis-II | 3 | 1 | 0 | 4 |
| 2 | R20CIV3102 | Geotechnical Engineering | 3 | 1 | 0 | 4 |
| 3 | R20CIV3103 | Structural Engineering –I**(RCC)** | 3 | 1 | 0 | 4 |
| 4 | R20CIV3104 | Transportation Engineering-I | 3 | 1 | 0 | 4 |
| **Professional Elective-I** | | | | | | |
| 5 | R20CIV3111 | Concrete Technology | 3 | 0 | 0 | 3 |
| | R20MBA3112 | Management Fundamentals for Engineers | | | | |
| | R20CIV3113 | Basics of Mechanical Engineering | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | R20CIV31L1 | Highway Engineering and Concrete Technology Lab | 0 | 0 | 2 | 1 |
| 7 | R20CIV31L2 | Geotechnical Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | R20CSE3124 | Cyber Security | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **4** | **6** | **22** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3201 | Hydrology & Water Resources Engineering | 3 | 1 | 0 | 4 |
| 2 | R20CIV3202 | Environmental Engineering | 3 | 0 | 0 | 3 |
| 3 | R20MBA3201 | Engineering Economics & Accounting | 3 | 0 | 0 | 3 |
| 4 | R20CIV3203 | Structural Engineering –II**(Steel)** | 3 | 1 | 0 | 4 |
| **Professional Elective –II** | | | | | | |
| 5 | R20CIV3221 | Prestressed Concrete Structures | 3 | 0 | 0 | 3 |
| | R20CIV3222 | Elements of Earth Quake Engineering | | | | |
| | R20CIV3223 | Finite Element Analysis | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 6 | | **Open Elective –I** | 3 | 0 | 0 | 3 |
| 7 | R20CIV32L1 | Environmental Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | R20CIV32L2 | Computer Aided Design Lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **18** | **2** | **4** | **22** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. CIVIL ENGINEERING**

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4101 | Estimation, Costing and Project Management | 3 | 1 | 0 | 4 |
| 2 | R20CIV4102 | Transportation Engineering-II | 3 | 1 | 0 | 4 |
| **Professional Elective –III** | | | | | | |
| 3 | R20CIV4131 | Remote Sensing &GIS | 3 | 0 | 0 | 3 |
| | R20CIV4132 | Ground Improvement Techniques | | | | |
| | R20CIV4133 | Advance Structural Analysis | | | | |
| **Professional Elective –IV** | | | | | | |
| 4 | R20CIV4141 | Irrigation and Hydraulic Structures | 3 | 0 | 0 | 3 |
| | R20CIV4142 | Theory of Elasticity | | | | |
| | R20CIV4143 | Ground water Hydrology | | | | |
| 5 | | **Open Elective –II** | 3 | 0 | 0 | 3 |
| 6 | R20CIV41P1 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| 7 | R20CIV41L1 | Seminar | 0 | 0 | 2 | 1 |
| 8 | R20CIV41P2 | Comprehensive Viva-voce | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **15** | **2** | **4** | **21** |

*** To be carried out during the summer vacation between 6th and 7th semesters.**

**Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.**

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| **Professional Elective -V** | | | | | | |
| 1 | R20CIV4251 | Foundation Engineering | 3 | 0 | 0 | 3 |
| | R20CIV4252 | Environmental Impact Assessment | | | | |
| | R20CIV4253 | Air pollution | | | | |
| **Professional Elective –VI** | | | | | | |
| 2 | R20CIV4261 | Airports, railways and water ways | 3 | 0 | 0 | 3 |
| | R20CIV4262 | Intelligent Transportation Systems | | | | |
| | R20CIV4263 | Urban Transportation Planning | | | | |
| 3 | | **Open Elective –III** | 3 | 0 | 0 | 3 |
| 4 | R20CIV42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |
| 9. | R20CIV3272 | Building Architecture | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | R20CIV4182 | Pre Fabricated Structures | | | | |
| 10 | | MOOCs – III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4291 | Spatial Technology Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | R20CIV4292 | Building Infrastructure Auditing | | | | |
| 10 | | MOOCs - IV | | | | |

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# Department of EEE

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS –BR20**

### B. Tech. ELECTRICAL & ELECTRONICS ENGINEERING

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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## Choice Based Credit System (CBCS)

**REGULATIONS –BR20**

### B. Tech. ELECTRICAL & ELECTRONICS ENGINEERING

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MED2203 | Fluid Mechanics & Hydraulic Machines | 3 | 1 | 0 | 4 |
| 2 | R20EEE2101 | Electrical Circuit Analysis | 3 | 1 | 0 | 4 |
| 3 | R20ECE2105 | Analog Electronics | 3 | 0 | 0 | 3 |
| 4 | R20EEE2102 | Electrical Machines-I | 3 | 1 | 0 | 4 |
| 5 | R20EEE2103 | Electro Magnetic Fields | 3 | 0 | 0 | 3 |
| 6 | R20EEE21L1 | Electrical Machines Lab-I | 0 | 0 | 2 | 1 |
| 7 | R20ECE21L4 | Analog Electronics Lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE21L2 | Electrical Circuits Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **15** | **3** | **8** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S.No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH2201 | Laplace Transforms , Numerical Methods & Complex variables | 3 | 1 | 0 | 4 |
| 2 | R20EEE2201 | Electrical Machines – II | 3 | 1 | 0 | 4 |
| 3 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 4 | R20EEE2202 | Control Systems | 3 | 1 | 0 | 4 |
| 5 | R20EEE2203 | Power System-I | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L2 | Digital Logic Design Lab | 0 | 0 | 2 | 1 |
| 7 | R20EEE22L1 | Electrical Machines Lab-II | 0 | 0 | 2 | 1 |
| 8 | R20EEE22L2 | Control Systems Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **3** | **6** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. ELECTRICAL & ELECTRONICS ENGINEERING

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20EEE3101 | Power Electronics | 3 | 1 | 0 | 4 |
| 2 | R20EEE3102 | Power System-II | 3 | 1 | 0 | 4 |
| 3 | R20EEE3103 | Measurements and Instrumentation | 3 | 1 | 0 | 4 |
| **Professional Elective-I** | | | | | | |
| 4 | R20CSE3164 | Computer Architecture | 3 | 0 | 0 | 3 |
| | R20EEE3111 | High Voltage Engineering | | | | |
| | R20EEE3112 | Electric Machine Design | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 5 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 6 | R20EEE31L1 | Power System Simulation Lab | 0 | 0 | 2 | 1 |
| 7 | R20EEE31L2 | Power Electronics Lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE31L3 | Measurements and Instrumentation Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **15** | **3** | **8** | **22** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Open Elective-I | 3 | 0 | 0 | 3 |
| **Professional Elective-II** | | | | | | |
| 2 | R20ECE3202 | Digital signal processing | 3 | 0 | 0 | 3 |
| | R20EEE3221 | Power Semiconductor Drives | | | | |
| | R20EEE3222 | Wind and Solar Energy systems | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 3 | R20ECE2103 | Signals and Systems | 2 | 1 | 0 | 3 |
| 4 | R20ECE3101 | Microprocessors & Microcontrollers | 3 | 0 | 0 | 3 |
| 5 | R20EEE3201 | Power System Protection | 3 | 1 | 0 | 4 |
| 6 | R20EEE3202 | Power System Operation and Control | 3 | 0 | 0 | 3 |
| 7 | R20EEE32L1 | Power System Lab | 0 | 0 | 2 | 1 |
| 8 | R20ECE31L1 | Microprocessors & Microcontrollers Lab | 0 | 0 | 2 | 1 |
| 9 | R20ECE32L4 | Signals and Systems Lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **17** | **2** | **6** | **22** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. ELECTRICAL & ELECTRONICS ENGINEERING

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Open Elective-II | 3 | 0 | 0 | 3 |
| **Professional Elective-III** | | | | | | |
| 2 | R20EEE4131 | Digital Control systems | 3 | 0 | 0 | 3 |
| | R20EEE4132 | Optimization Techniques | | | | |
| | R20EEE4133 | Electrical and Hybrid Vehicles | | | | |
| **Professional Elective-IV** | | | | | | |
| 3 | R20EEE4141 | HVDC Transmission | 3 | 1 | 0 | 4 |
| | R20EEE4142 | Power System Reliability | | | | |
| | R20EEE4143 | Industrial Electrical Systems | | | | |
| 4 | R20MBA4101 | Fundamentals of Management for Engineers | 3 | 0 | 0 | 3 |
| 5 | R20EEE41L1 | Electrical & Electronics Design Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20EEE41L2 | Technical Seminar | 0 | 0 | 3 | 1.5 |
| 7 | R20EEE41P1 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 4 | 2 |
| 8 | R20EEE41P2 | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| | | **Total Credits** | **12** | **1** | **16** | **21** |

*** To be carried out during the summer vacation between 6th and 7th semesters.**

**Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.**

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Open Elective-III | 3 | 0 | 0 | 3 |
| **Professional Elective-V** | | | | | | |
| 2 | R20EEE4251 | Power Quality & FACTS | 3 | 0 | 0 | 3 |
| | R20EEE4252 | Control System Design | | | | |
| | R20CSE4265 | AI Techniques in Electrical Engineering | | | | |
| **Professional Elective-VI** | | | | | | |
| 3 | R20EEE4261 | Smart Grid Technologies | 3 | 0 | 0 | 3 |
| | R20EEE4262 | Electrical Distribution Systems | | | | |
| | R20EEE4263 | Advanced Control of Electric Drives | | | | |
| 4 | R20EEE42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

***MC – Satisfied/Unsatisfied**

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |
| 9. | R20CIV3272 | Building Architecture | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | R20CIV4182 | Pre Fabricated Structures | | | | |
| 10 | | MOOCs – III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4291 | Spatial Technology Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | R20CIV4292 | Building Infrastructure Auditing | | | | |
| 10 | | MOOCs - IV | | | | |

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# Department of
# Mechanical Engineering

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. Mechanical ENGINEERING
## (Common to ME & CIVIL)

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EPH1101 | Engineering Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EPH11L1 | Engineering Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 8 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| | | **Total Credits** | **13** | **3** | **10** | **18** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | **3** | **1** | **0** | **4** |
| 2 | R20ECH1101 | Chemistry | **3** | **1** | **0** | **4** |
| 3 | R20MED1103 | Engineering Mechanics | **3** | **1** | **0** | **4** |
| 4 | R20MED1101 | Engineering Workshop | **1** | **0** | **3** | **2.5** |
| 5 | R20HAS1101 | English | **2** | **0** | **0** | **2** |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | **0** | **0** | **3** | **1.5** |
| 7 | R20HAS11L2 | English Language and Communication Skills Lab | **0** | **0** | **2** | **1** |
| 8 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 9 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **3** | **8** | **19** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. Mechanical ENGINEERING

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH2102 | Probability Distribution & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | R20MED2101 | Mechanics of Solids | 3 | 1 | 0 | 4 |
| 3 | R20MED2102 | Material Science & Metallurgy | 3 | 0 | 0 | 3 |
| 4 | R20MED2103 | Production Technology | 3 | 0 | 0 | 3 |
| 5 | R20MED2104 | Thermodynamics | 3 | 1 | 0 | 4 |
| 6 | R20MED21L1 | Production Technology Lab | 0 | 0 | 2 | 1 |
| 7 | R20MED21L2 | Machine Drawing Practice | 0 | 0 | 2 | 1 |
| 8 | R20MED21L3 | Material Science & Mechanics of Solids Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **15** | **3** | **8** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S.No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20EEE2204 | Basics of Electrical & Electronics Engineering | 3 | 0 | 0 | 3 |
| 2 | R20MED2201 | Kinematics of Machinery | 3 | 1 | 0 | 4 |
| 3 | R20MED2202 | Thermal Engineering-I | 3 | 1 | 0 | 4 |
| 4 | R20MED2203 | Fluid Mechanics & Hydraulic Machines | 3 | 1 | 0 | 4 |
| 5 | R20MED2204 | Instrumentation & Control Systems | 3 | 0 | 0 | 3 |
| 6 | R20EEE22L3 | Electrical & Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | R20MED22L1 | Fluid Mechanics & Hydraulic Machines Lab | 0 | 0 | 2 | 1 |
| 8 | R20MED22L2 | Instrumentation & Control Systems Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **3** | **6** | **21** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. MECHANICAL ENGINEERING**

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MED3101 | Dynamics of Machinery | 3 | 1 | 0 | 4 |
| 2 | R20MED3102 | Design of Machine Members-I | 3 | 0 | 0 | 3 |
| 3 | R20MED3103 | Metrology & Machine Tools | 3 | 0 | 0 | 3 |
| 4 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 5 | R20MED3104 | Thermal Engineering-II | 3 | 0 | 0 | 3 |
| 6 | R20MTH3101 | Operations Research | 3 | 0 | 0 | 3 |
| 7 | R20MED31L1 | Thermal Engineering Lab | 0 | 0 | 2 | 1 |
| 8 | R20MED31L2 | Metrology & Machine Tools Lab | 0 | 0 | 2 | 1 |
| 9 | R20MED31L3 | Kinematics & Dynamics Lab | 0 | 0 | 2 | 1 |
| 10 | R20MAC3100 | MOOCs-I | 0 | 0 | 2 | 0 |
| 11 | R20CSE3124 | Cyber Security | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **21** | **1** | **8** | **22** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MED3201 | Design of Machine Members-II | 3 | 0 | 0 | 3 |
| 2 | R20MED3202 | Heat Transfer | 3 | 1 | 0 | 4 |
| 3 | R20MED3203 | CAD & CAM | 3 | 0 | 0 | 3 |
| **Professional Elective – I** | | | | | | |
| 4 | R20MED3211 | Unconventional Machining Processes | 3 | 0 | 0 | 3 |
| | R20MED3212 | Machine Tool Design | | | | |
| | R20MED3213 | Production Planning & Control | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | Open Elective – I | 3 | 0 | 0 | 3 |
| 6 | R20MED3204 | Finite Element Methods | 3 | 0 | 0 | 3 |
| 7 | R20MED32L1 | Heat Transfer Lab | 0 | 0 | 2 | 1 |
| 8 | R20MED32L2 | CAD & CAM Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS31L1 | Advanced Communication Skills lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **18** | **1** | **8** | **22** |

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**REGULATIONS – BR20**

### B. Tech. MECHANICAL ENGINEERING

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MED4101 | Refrigeration & Air Conditioning | 3 | 1 | 0 | 4 |
| **Professional Elective – II** | | | | | | |
| 2 | R20MED4121 | Additive Manufacturing | 3 | 0 | 0 | 3 |
| | R20MED4122 | Automation in Manufacturing | | | | |
| | R20MED4123 | Micro Electro Mechanical Systems (MEMS) | | | | |
| **Professional Elective – III** | | | | | | |
| 3 | R20MED4131 | Power Plant Engineering | 3 | 1 | 0 | 4 |
| | R20MED4132 | Automobile Engineering | | | | |
| | R20MED4133 | Renewable Energy Sources | | | | |
| **Professional Elective – IV** | | | | | | |
| 4 | R20MED4141 | Computational Fluid Dynamics | 3 | 0 | 0 | 3 |
| | R20MED4142 | Turbo Machinery | | | | |
| | R20MED4143 | Fluid Power Systems | | | | |
| 5 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 6 | R20MED41L1 | Technical Seminar | 0 | 0 | 2 | 1 |
| 7 | R20MED41P2 | Comprehensive Viva-voce | 0 | 0 | 2 | 1 |
| 8 | R20MED41P1 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| | | **Total Credits** | **15** | **2** | **4** | **21** |

*** To be carried out during the summer vacation between 6th and 7th semesters.**

**Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for valuation.**

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| **Professional Elective – V** | | | | | | |
| 1 | R20MED4251 | Industrial Robotics | 3 | 0 | 0 | 3 |
| | R20MED4252 | Mechanical Vibrations | | | | |
| | R20MED4253 | Composite Materials | | | | |
| **Professional Elective – VI** | | | | | | |
| 2 | R20MED4261 | Industrial Management | 3 | 0 | 0 | 3 |
| | R20MED4262 | Production Operation and Management | | | | |
| | R20MED4263 | Nanotechnology & Application | | | | |
| 3 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4 | R20ECE42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

***MC – Satisfied/Unsatisfied**

# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

# ECE

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 8 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| | | **Total Credits** | **13** | **3** | **10** | **18** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | **3** | **1** | **0** | **4** |
| 2 | R20ECH1101 | Chemistry | **3** | **1** | **0** | **4** |
| 3 | R20EEE1101 | Basic Electrical Engineering | **3** | **0** | **0** | **3** |
| 4 | R20MED1101 | Engineering Workshop | **1** | **0** | **3** | **2.5** |
| 5 | R20HAS1101 | English | **2** | **0** | **0** | **2** |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | **0** | **0** | **3** | **1.5** |
| 7 | R20HAS11L2 | English Language and Communication Skills Lab | **0** | **0** | **2** | **1** |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | **0** | **0** | **2** | **1** |
| 9 | R20COI1101 | Constitution of India | **3** | **0** | **0** | **0** |
| 10 | R20ITK1101 | Essence of Indian Traditional Knowledge | **3** | **0** | **0** | **0** |
| | | **Total Credits** | **18** | **2** | **10** | **19** |

ENGG. & TECH. SRI INDU COLLEGE OF Sheriguda (V), Ibrahimpatnam (M), R.R. Dist-501 510.

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**REGULATIONS – BR20**

## B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2101 | Electronic Devices and Circuits | 3 | 1 | 0 | 4 |
| 2 | R20EEE2104 | Network Theory | 3 | 0 | 0 | 3 |
| 3 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 4 | R20ECE2103 | Signals and Systems | 3 | 1 | 0 | 4 |
| 5 | R20ECE2104 | Probability Theory and Stochastic Processes | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L1 | Electronic Devices and Circuits Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20ECE21L2 | Digital Logic Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20ECE21L3 | Basic Simulation Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **15** | **2** | **10** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH2201 | Laplace Transforms, Numerical Methods & Complex Variables | 3 | 1 | 0 | 4 |
| 2 | R20ECE2201 | Electromagnetic Theory And Transmission Lines | 3 | 0 | 0 | 3 |
| 3 | R20ECE2202 | Analog and Digital Communications | 3 | 1 | 0 | 4 |
| 4 | R20ECE2203 | Linear and Digital IC Applications | 3 | 0 | 0 | 3 |
| 5 | R20ECE2204 | Electronic Circuit Analysis | 3 | 0 | 0 | 3 |
| 6 | R20ECE22L1 | Analog and Digital Communications Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20ECE22L2 | IC Applications Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20ECE22L3 | Electronic Circuit Analysis Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **2** | **8** | **21** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 2 | R20ECE3101 | Microprocessors & Microcontrollers | 3 | 1 | 0 | 4 |
| 3 | R20INF3103 | Data Communications and Networks | 3 | 1 | 0 | 4 |
| 4 | R20EEE2202 | Control Systems | 3 | 1 | 0 | 4 |
| 5 | **Professional Elective – I** | | | | | |
| | R20CSE3114 | Computer Organization & Operating Systems | 3 | 0 | 0 | 3 |
| | R20ECE3112 | Coding Theory & Techniques | | | | |
| | R20ECE3113 | Electronic Measurements & Instrumentation | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | R20ECE31L1 | Microprocessors & Microcontrollers Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20INF31L2 | Data Communications and Networks Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **15** | **3** | **8** | **22** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE3201 | Antennas and Wave Propagation | 3 | 1 | 0 | 4 |
| 2 | R20ECE3202 | Digital Signal Processing | 3 | 1 | 0 | 4 |
| 3 | R20ECE3203 | VLSI Design | 3 | 1 | 0 | 4 |
| 4 | **Professional Elective - II** | | | | | |
| | R20ECE3221 | Embedded System Design | 3 | 0 | 0 | 3 |
| | R20CSE4152 | Internet of Things (IOT) | | | | |
| | R20CSE3201 | Machine Learning | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | Open Elective - I | 3 | 0 | 0 | 3 |
| 6 | R20ECE32L1 | Digital Signal Processing Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20ECE32L2 | VLSI & e-CAD Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20ECE32L3 | Technical Seminar | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **15** | **3** | **8** | **22** |

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**REGULATIONS – BR20**

**B. Tech. ELECTRONICS & COMMUNICATION ENGINEERING**

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE4101 | Microwave and Optical Communication | 3 | 1 | 0 | 4 |
| 2 | R20HAS4101 | Professional Practice, Law & Ethics | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective – III** | | | | | |
| | R20ECE4131 | Digital Image Processing | 3 | 1 | 0 | 4 |
| | R20CSE4101 | Cryptography and Network Security | | | | |
| | R20CSE3122 | Artificial Intelligence (AI) | | | | |
| 4 | **Professional Elective – IV** | | | | | |
| | R20ECE4141 | Cellular & Mobile Communications | 3 | 1 | 0 | 4 |
| | R20ECE4142 | Digital Signal Processors & Architectures | | | | |
| | R20ECE4143 | System on Chip Architecture | | | | |
| 5 | | Open Elective - II | 3 | 0 | 0 | 3 |
| 6 | R20ECE41L1 | Microwave & Optical Communications Lab | 0 | 0 | 2 | 1 |
| 7 | R20ECE41P2 | Comprehensive Viva Voce | 0 | 0 | 2 | 1 |
| 8 | R20ECE41P1 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| | | **Total Credits** | **14** | **3** | **4** | **21** |

*** To be carried out during the summer vacation between 6th and 7th semesters.**

**Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.**

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | **Professional Elective – V** | | | | | |
| | R20ECE4251 | Satellite Communications | 3 | 0 | 0 | 3 |
| | R20ECE4252 | Low Power VLSI | | | | |
| | R20ECE4253 | Wireless Sensor Networks | | | | |
| 2 | **Professional Elective – VI** | | | | | |
| | R20ECE4261 | Wireless Communication & Networks | 3 | 0 | 0 | 3 |
| | R20ECE4262 | Electronic Product Design & Packaging | | | | |
| | R20ECE4263 | Radar Systems | | | | |
| 3 | | Open Elective - III | 3 | 0 | 0 | 3 |
| 4 | R20ECE42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

## Computer Science & Engineering

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. COMPUTER SCIENCE & ENGINEERING

**Common to EEE, CSE, CSIT, CSE(DS), CSE(CS), CSE(AIML), CSE(IOT) & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. COMPUTER SCIENCE & ENGINEERING**

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2105 | Analog Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2103 | Probability & Statistical Methods | 4 | 0 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2103 | Object Oriented Programming using C++ | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L4 | Analog Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L3 | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **15** | **1** | **12** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. COMPUTER SCIENCE & ENGINEERING

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20CSE2205 | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | R20CSE3104 | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE3111 | Advanced Computer Architecture | | | | |
| | R20CSE2206 | Formal Languages & Automata Theory | | | | |
| | R20CSE3113 | Principles of Programming Languages | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | **Professional Elective -II** | | 3 | 0 | 0 | 3 |
| | R20CSE3121 | Advanced Operating Systems | | | | |
| | R20CSE3122 | Artificial Intelligence | | | | |
| | R20CSE3123 | Distributed Databases | | | | |
| 7 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE31L2 | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10 | R20COI1101 | Constitution of India | **3** | **0** | **0** | **0** |
| | | Total Credits | **21** | **0** | **8** | **22** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | R20CSE3202 | Compiler Design | 3 | 1 | 0 | 4 |
| 3 | R20CSE3203 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | **Professional Elective –III** | | 3 | 0 | 0 | 3 |
| | R20CSE3231 | Software Testing Methodologies | | | | |
| | R20CSE3232 | Scripting Languages | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | **Open Elective-I** | 3 | 0 | 0 | 3 |
| 6 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE32L2 | Compiler Design Lab | 0 | 0 | 3 | 1.5 |
| 8 | Professional Elective-III Lab | | 0 | 0 | 2 | 1 |
| | | Total Credits | **15** | **3** | **8** | **22** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

### B. Tech. COMPUTER SCIENCE & ENGINEERING

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE4101 | Cryptography and Network Security | 3 | 0 | 0 | 3 |
| 2 | R20CSE4102 | Data Mining | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective -IV** | | 3 | 0 | 0 | 3 |
| | R20CSE4141 | Graph Theory | | | | |
| | R20CSE4142 | Information Retrieval Systems | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| | R20MAC4100 | MOOCs-III | | | | |
| 4 | **Professional Elective -V** | | 3 | 0 | 0 | 3 |
| | R20CSE4151 | Soft Computing | | | | |
| | R20CSE4152 | Internet of Things | | | | |
| | R20CSE4153 | Software Process & Project Management | | | | |
| 5 | | **Open Elective - II** | 3 | 0 | 0 | 3 |
| 6 | R20CSE41L1 | Cryptography and Network Security Lab | 0 | 0 | 2 | 1 |
| 7 | R20CSE41P1 | Technical Seminar | 0 | 0 | 2 | 1 |
| 8 | R20CSE41P2 | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| 9 | R20CSE41P3 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| | | **Total Credits** | **14** | **0** | **10** | **21** |

**** To be carried out during the summer vacation between 6th and 7th semesters***

***Note: Students should submit report of Industrial Oriented Mini Project/ Summer Internship for evaluation.***

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20HAS4201 | Organizational Behaviour | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective -VI** | | 3 | 0 | 0 | 3 |
| | R20CSE4261 | Distributed Systems | | | | |
| | R20CSE4262 | Cyber Forensics | | | | |
| | R20CSE4263 | Human Computer Interaction | | | | |
| | R20MAC4200 | MOOCs-IV | | | | |
| 3 | | **Open Elective-III** | 3 | 0 | 0 | 3 |
| 4 | R20CSE42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | Total Credits | **9** | **0** | **14** | **16** |

***MC – Satisfied/Unsatisfied**

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

## Information Technology

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

# B. Tech. - INFORMATION TECHNOLOGY

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - INFORMATION TECHNOLOGY

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2105 | Analog Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2103 | Probability & Statistical Methods | 4 | 0 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2103 | Object Oriented Programming using C++ | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L4 | Analog Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L3 | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **15** | **1** | **12** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - INFORMATION TECHNOLOGY

### III YEAR I SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20INF3101 | Data Communication & Computer Networks | 3 | 0 | 0 | 3 |
| 4 | R20CSE3104 | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE3111 | Advanced Computer Architecture | | | | |
| | R20CSE2206 | Formal Languages & Automata Theory | | | | |
| | R20CSE3113 | Principles of Programming Languages | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | **Professional Elective –II** | | 3 | 0 | 0 | 3 |
| | R20CSE3121 | Advanced Operating Systems | | | | |
| | R20CSE3122 | Artificial Intelligence | | | | |
| | R20INF3122 | Computer Graphics | | | | |
| 7 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE31L2 | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 10. | R20COI1101 | Constitution of India | **3** | **0** | **0** | **0** |
| | | **Total Credits** | **21** | **0** | **8** | **22** |

### III YEAR II SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 2 | R20INF3201 | Principles of Compiler Construction | 3 | 1 | 0 | 4 |
| 3 | R20INF3202 | Algorithm Design and Analysis | 3 | 1 | 0 | 4 |
| 5 | **Professional Elective –III** | | 3 | 0 | 0 | 3 |
| | R20CSE3231 | Software Testing Methodologies | | | | |
| | R20CSE3232 | Scripting Languages | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 6 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 7 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20INF32L1 | Compiler Construction Lab | 0 | 0 | 3 | 1.5 |
| 9 | Professional Elective-III Lab | | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **15** | **3** | **8** | **22** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - INFORMATION TECHNOLOGY

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20INF4101 | Information Security | 3 | 0 | 0 | 3 |
| 2 | R20CSE4102 | Data Mining | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective –IV** | | 3 | 0 | 0 | 3 |
| | R20INF4142 | Pattern Recognition | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| | R20INF4141 | Adhoc Sensor Networks | | | | |
| | R20MAC4100 | MOOCs-III | | | | |
| 4 | **Professional Elective –V** | | 3 | 0 | 0 | 3 |
| | R20CSE4152 | Internet of Things | | | | |
| | R20CSE3123 | Distributed Databases | | | | |
| | R20CSE4153 | Software Process & Project Management | | | | |
| 5 | | Open Elective-II | 3 | 0 | 0 | 3 |
| 6 | R20INF41L1 | Information Security Lab | 0 | 0 | 2 | 1 |
| 7 | R20INF41P1 | Technical Seminar | 0 | 0 | 2 | 1 |
| 8 | R20INF41P2 | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| 9 | R20INF41P3 | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2* |
| | | **Total Credits** | **14** | **0** | **10** | **21** |

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20HAS4201 | Organizational Behaviour | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective –VI** | | 3 | 0 | 0 | 3 |
| | R20CSE4261 | Distributed Systems | | | | |
| | R20CSE4262 | Cyber Forensics | | | | |
| | R20CSE4263 | Human Computer Interaction | | | | |
| | R20MAC4200 | MOOCs-IV | | | | |
| 3 | | Open Elective-III | 3 | 0 | 0 | 3 |
| 4 | R20INF42P1 | Project Work | 0 | 0 | 14 | 7 |
| | | Total Credits | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

## Computer Science & Information Technology

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

SRI INDU COLLEGE OF ENGG. & TECH. Sheriguda (V), Ibrahimpatnam (M), R.R. Dist-501 510.

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2105 | Analog Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2103 | Probability & Statistical Methods | 4 | 0 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2103 | Object Oriented Programming using C++ | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L4 | Analog Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L3 | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **15** | **1** | **12** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. – COMPUTER SCIENCE & INFORMATION TECHNOLOGY

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2105 | Analog Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2103 | Probability & Statistical Methods | 4 | 0 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2103 | Object Oriented Programming using C++ | 3 | 0 | 0 | 3 |
| 6 | R20ECE21L4 | Analog Electronics Lab | 0 | 0 | 2 | 1 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L3 | C++ Programming Lab | 0 | 0 | 2 | 1 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | **Total Credits** | **16** | **0** | **12** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20ECE2102 | Digital Logic Design | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | **Total Credits** | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. – COMPUTER SCIENCE & INFORMATION TECHNOLOGY

### III YEAR I SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 3 | R20INF3101 | Data Communication & Computer Networks | 3 | 0 | 0 | 3 |
| 4 | R20CSE3104 | Web Technologies | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE3111 | Advanced Computer Architecture | | | | |
| | R20CSE2206 | Formal Languages & Automata Theory | | | | |
| | R20CSE3113 | Principles of Programming Languages | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | **Professional Elective –II** | | 3 | 0 | 0 | 3 |
| | R20CSE3121 | Advanced Operating Systems | | | | |
| | R20CSE3122 | Artificial Intelligence | | | | |
| | R20INF3122 | Computer Graphics | | | | |
| 7 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE31L2 | Computer Networks & Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 10. | R20COI1101 | Constitution of India | **3** | **0** | **0** | **0** |
| | | **Total Credits** | **21** | **1** | **9** | **23.5** |

### III YEAR II SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 2 | R20INF3201 | Principles of Compiler Construction | 3 | 1 | 0 | 4 |
| 3 | R20INF3202 | Algorithm Design and Analysis | 3 | 1 | 0 | 4 |
| 5 | **Professional Elective –III** | | 3 | 0 | 0 | 3 |
| | R20CSE3231 | Software Testing Methodologies | | | | |
| | R20CSE3232 | Scripting Languages | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 6 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 7 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 8 | R20INF32L1 | Compiler Construction Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE32L3 | Professional Elective-III Lab | 0 | 0 | 2 | 1 |
| | | **Total Credits** | **12** | **2** | **7** | **20.5** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

# Data Science

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (DATA SCIENCE)

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (DATA SCIENCE)

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2104 | Mathematical and Statistical Foundations | 3 | 1 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2104 | Python Programming | 2 | 0 | 0 | 2 |
| 6 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L4 | Python Programming Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **17** | **1** | **8** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2206 | Formal Language and Automata Theory | 3 | 0 | 0 | 3 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (DATA SCIENCE)

### III YEAR I SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3231 | Software Testing Methodologies | 3 | 0 | 0 | 3 |
| 2 | R20CSD3101 | Introduction to Data Science | 3 | 0 | 0 | 3 |
| 3 | R20CSC2201 | Fundamentals of Networking | 3 | 1 | 0 | 4 |
| 4 | R20CSD3102 | Data Warehousing & Data Mining | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE3111 | Advanced Computer Architecture | | | | |
| | R20CSE4261 | Distributed Systems | | | | |
| | R20CSE3113 | Principles of Programming Languages | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | **Professional Elective-II** | | 3 | 0 | 0 | 3 |
| | R20INF4142 | Pattern Recognition | | | | |
| | R20CSE4142 | Information Retrieval Systems | | | | |
| | R20CSM3104 | Computer Vision and Robotics | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| 7 | R20CSE22L4 | Computer Networks Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSD31L1 | Data Warehousing & Data Mining Lab | 0 | 0 | 2 | 1 |
| 9 | R20CSD31L2 | Software Testing & CASE Tools Lab | 0 | 0 | 3 | 1.5 |
| | | Total Credits | **18** | **1** | **8** | **23** |

### III YEAR II SEMESTER — COURSE STRUCTURE

| S.No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3203 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 2 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 3 | R20CSE4152 | Internet of Things | 3 | 0 | 0 | 3 |
| 4 | Professional Elective–III | | 3 | 0 | 0 | 3 |
| | R20CSD3201 | Big Data Analytics | | | | |
| | R20CSE3232 | Scripting Languages | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20CSE4101 | Cryptography and Network Security | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | Open Elective-I | 3 | 0 | 0 | 3 |
| 6 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSO32L1 | IoT Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

# B. Tech. - CSE (DATA SCIENCE)

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Predictive Analytics | 3 | 0 | 0 | 3 |
| 2 | | Web and Social Media Analytics | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective – IV** | | 3 | 0 | 0 | 3 |
| | | Quantum Computing | | | | |
| | | Database Security | | | | |
| | | Natural Language Processing | | | | |
| | | Information Storage Management | | | | |
| | | Internet of Things | | | | |
| 4 | Professional Elective – V | | 3 | 0 | 0 | 3 |
| | | Privacy Preserving in Data Mining | | | | |
| | | Cloud Computing | | | | |
| | | Data Science Applications | | | | |
| | | Mining Massive Datasets | | | | |
| | | Exploratory Data Analysis | | | | |
| 5 | **Open Elective – II** | | 3 | 0 | 0 | 3 |
| 6 | | Web and Social Media Analytics Lab | 0 | 0 | 2 | 1 |
| 7 | | Technical Seminar | 0 | 0 | 2 | 1 |
| 8 | | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| 9 | | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2 |
| | | **Total Credits** | **14** | **0** | **10** | **21** |

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Organizational Behaviour | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective -VI** | | 3 | 0 | 0 | 3 |
| | | Data Stream Mining | | | | |
| | | Web Security | | | | |
| | | Video Analytics | | | | |
| | | Blockchain Technology | | | | |
| | | Parallel and Distributed Computing | | | | |
| 3 | **Open Elective-III** | | 3 | 0 | 0 | 3 |
| 4 | | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

# Cyber Security

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (CYBER SECURITY)

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (CYBER SECURITY)

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2106 | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2104 | Mathematical and Statistical Foundations | 3 | 1 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2104 | Python Programming | 2 | 0 | 0 | 2 |
| 6 | R20ECE21L5 | Analog and Digital Electronics Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L4 | Python Programming Lab | 0 | 0 | 3 | 1.5 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **14** | **1** | **14** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2205 | Computer Networks | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L4 | Computer Networks Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (CYBER SECURITY)

### III YEAR I SEMESTER — COURSE STRUCTURE

| S.No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3203 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 2 | R20CSE4101 | Cryptography and Network Security | 3 | 0 | 0 | 3 |
| 3 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 4 | R20CSE3122 | Artificial Intelligence | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE2206 | Formal Language & Automata Theory | | | | |
| | R20CSM3103 | Multimedia and Spatial Databases | | | | |
| | R20INF4141 | Adhoc Sensor Networks | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 6 | **Professional Elective-II** | | 3 | 0 | 0 | 3 |
| | R20CSC3102 | Ethical Hacking | | | | |
| | R20CSE4261 | Distributed Systems | | | | |
| | R20CSD3101 | Introduction to Data Science | | | | |
| | R20CSC3103 | Cyber Laws | | | | |
| | R20CSO3104 | IOT Security | | | | |
| 7 | R20CSE41L1 | Cryptography and Network Security Lab | 0 | 0 | 2 | 1 |
| 8 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSM31L1 | Artificial Intelligence Lab | 0 | 0 | 3 | 1.5 |
| | | Total Credits | **18** | **2** | **8** | **24** |

### III YEAR II SEMESTER — COURSE STRUCTURE

| S.No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSC3201 | Cyber Security | 3 | 0 | 0 | 3 |
| 2 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 3 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 4 | **Professional Elective–III** | | 3 | 0 | 0 | 3 |
| | R20CSC3202 | Cyber Crime Investigation and Digital Forensics | | | | |
| | R20CSM3204 | DevOps | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20CSC3203 | Block Chain Technology | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | **Open Elective-I** | 3 | 0 | 0 | 3 |
| 6 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **1** | **8** | **20** |

SRI INDU COLLEGE OF ENG. & TECH. Sheriguda (V), Ibrahimpatnam (M), R.R. Dist-501 510

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. CSE(CYBER SECURITY)

### IV YEAR I SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Vulnerability Assessment & Penetration Testing | 3 | 0 | 0 | 3 |
| 2 | | Network Management Systems and Operations | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective - IV** | | | | | |
| | | Edge Analytics | 3 | 0 | 0 | 3 |
| | | Web & Database Security | | | | |
| | | Computer Security & Audit Assurance | | | | |
| | | Social Media Security | | | | |
| | | Deep Learning | | | | |
| 4 | **Professional Elective - V** | | | | | |
| | | Quantum Computing | 3 | 0 | 0 | 3 |
| | | Data Analytics for Fraud Detection | | | | |
| | | 5G Technologies | | | | |
| | | Security Incident & Response Management (SOC) | | | | |
| | | Authentication Techniques | | | | |
| 5 | **Open Elective - II** | | 3 | 0 | 0 | 3 |
| 6 | | Vulnerability Assessment & Penetration Testing Lab | 0 | 0 | 2 | 1 |
| 7 | | Industrial Oriented Mini Project / Summer Internship | 0 | 0 | 0 | 2 |
| 8 | | Seminar | 0 | 0 | 2 | 1 |
| 9 | | Project Stage - I | 0 | 0 | 6 | 3 |
| | | **Total** | **14** | **0** | **10** | **21** |

### IV YEAR II SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Organizational Behavior | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective – VI** | | | | | |
| | | Quantum Cryptography | 3 | 0 | 0 | 3 |
| | | IoT Cloud Processing and Analytics | | | | |
| | | Cloud Security | | | | |
| | | Digital Watermarking and Steganography | | | | |
| | | Data Privacy | | | | |
| 3 | **Open Elective – III** | | 3 | 0 | 0 | 3 |
| 4 | | Project Stage – II | 0 | 0 | 14 | 16 |
| | | **Total** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

# Internet of Things

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (INTERNET OF THINGS (IoT))

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - CSE (INTERNET OF THINGS (IoT))

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE2106 | Analog and Digital Electronics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2103 | Probability & Statistical Methods | 4 | 0 | 0 | 4 |
| 4 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 5 | R20CSE2104 | Python Programming | 2 | 0 | 0 | 2 |
| 6 | R20ECE21L5 | Analog and Digital Electronics Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L2 | IT Workshop Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE21L4 | Python Programming Lab | 0 | 0 | 3 | 1.5 |
| 10 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **15** | **0** | **14** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 2 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2205 | Computer Networks | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L4 | Computer Networks Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |

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## SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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### Choice Based Credit System (CBCS)

## REGULATIONS – BR20

## B. Tech. - CSE (INTERNET OF THINGS (IoT))

**III YEAR I SEMESTER** **COURSE STRUCTURE**

| S.No. | CourseCode | CourseTitle | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSC3101 | Finite Automata & Compiler Design | 3 | 0 | 0 | 3 |
| 2 | R20CSO3102 | IoT Communication Protocol | 2 | 0 | 0 | 2 |
| 3 | R20CSE3231 | Software Testing Methodologies | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20INF4141 | Adhoc Sensor Networks | | | | |
| | R20CSD3102 | Data Warehousing & Data Mining | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| | R20MAC3100 | MOOCs - I | | | | |
| 6 | **Professional Elective-II** | | 3 | 1 | 0 | 4 |
| | R20CSE3201 | Machine Learning | | | | |
| | R20CSO3103 | Real Time Systems | | | | |
| | R20ECE3204 | Introduction to Embedded System Design | | | | |
| | R20INF3103 | Data Communications and Networks | | | | |
| 7 | R20CSE32L4 | Software Testing Methodologies Lab | 0 | 0 | 2 | 1 |
| 8 | R20CSO32L1 | IoT Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| | | Total Credits | **17** | **2** | **8** | **23** |

**III YEAR II SEMESTER** **COURSE STRUCTURE**

| S.No. | CourseCode | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20ECE3101 | Microprocessors and Microcontrollers | 3 | 1 | 0 | 4 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20CSE3203 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 4 | **Professional Elective–III** | | 3 | 0 | 0 | 3 |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20CSM3104 | Computer Vision and Robotics | | | | |
| | R20CSE4101 | Cryptography and Network Security | | | | |
| | R20CSE3122 | Artificial Intelligence | | | | |
| | R20MAC3200 | MOOCs - II | | | | |
| 5 | | **Open Elective-I** | 3 | 0 | 0 | 3 |
| 6 | R20ECE31L1 | Microprocessors and Microcontrollers Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR22**

## B. Tech. CSE ( INTERNET OF THINGS )

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | CourseCode | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | IoT Cloud Processing and Analytics | 3 | 0 | 0 | 3 |
| 2 | | IoT Security | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective -IV** | | | | | |
| | | Quantum Computing | 3 | 0 | 0 | 3 |
| | | Wireless Networks | | | | |
| | | Augmented Reality & Virtual Reality | | | | |
| | | IoT Automation | | | | |
| | | Ad-hoc & Sensor Networks | | | | |
| 4 | **Professional Elective - V** | | | | | |
| | | Embedded Software Design | 3 | 0 | 0 | 3 |
| | | 5G & IoT Technologies | | | | |
| | | Cognitive Computing | | | | |
| | | Distributed Systems | | | | |
| | | Edge Computing | | | | |
| 5 | **Open Elective - II** | | 3 | 0 | 0 | 3 |
| 6 | | IoT Security & Cloud Computing Lab | 0 | 0 | 2 | 1 |
| 7 | | Industrial Oriented Mini Project / Summer Internship | 0 | 0 | 0 | 2 |
| 8 | | Seminar | 0 | 0 | 2 | 1 |
| 9 | | Project Stage - I | 0 | 0 | 6 | 3 |
| | | **Total Credits** | **14** | **0** | **10** | **21** |
| | | | | | | |

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Organizational Behaviour | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective – VI** | | | | | |
| | | Industrial IoT | 3 | 0 | 0 | 3 |
| | | Fog Computing | | | | |
| | | Smart Sensor Technologies | | | | |
| | | Digital Forensics | | | | |
| | | Blockchain Technology | | | | |
| 3 | **Open Elective – III** | | 3 | 0 | 0 | 3 |
| 4 | | Project Stage – II | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

## Artificial Intelligence & Machine Learning

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

**Common to EEE, CSE & IT**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 8 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **16** | **3** | **10** | **18** |

SRI INDU COLLEGE OF ENG. & TECH. Sheriguda (V), Ibrahimpatnam (M), R.R. Dist.-501 510.

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2104 | Mathematical and Statistical Foundations | 3 | 1 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2104 | Python Programming | 2 | 0 | 0 | 2 |
| 6 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L4 | Python Programming Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **17** | **1** | **8** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2206 | Formal Language and Automata Theory | 3 | 0 | 0 | 3 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

SRI INDU COLLEGE OF ENG. & TECH. Sheriguda (V), Ibrahimpatnam (M), R.R. Dist-501 510

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

### III YEAR I SEMESTER — COURSE STRUCTURE

| S.No. | Course Code | CourseTitle | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3203 | Design and analysis of Algorithms | 3 | 1 | 0 | 4 |
| 2 | R20CSE4101 | Cryptography and Network Security | 3 | 0 | 0 | 3 |
| 3 | R20CSE3122 | Artificial Intelligence | 3 | 0 | 0 | 3 |
| 4 | R20CSM3104 | Computer Vision and Robotics | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 1 | 0 | 4 |
| | R20ECE3101 | Microprocessors and Microcontrollers | | | | |
| | R20ECE4131 | Digital Image Processing | | | | |
| | R20CSM3101 | Compiler Construction | | | | |
| | R20CSM3102 | Data Mining Concepts | | | | |
| 6 | **Professional Elective-II** | | 3 | 0 | 0 | 3 |
| | R20CSM3103 | Multimedia and Spatial Databases | | | | |
| | R20CSE4142 | Information Retrieval Systems | | | | |
| | R20CSE4153 | Software Process & Project Management | | | | |
| | R20CSE4143 | Cloud Computing | | | | |
| | R20MAC3100 | MOOCs-I | | | | |
| 7 | R20CSE41L1 | Cryptography and Network Security Lab | 0 | 0 | 2 | 1 |
| 8 | R20CSM31L1 | Artificial Intelligence Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20CSE31L1 | Software Engineering Lab | 0 | 0 | 3 | 1.5 |
| | | Total Credits | **18** | **2** | **8** | **24** |

### III YEAR II SEMESTER — COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3104 | Web Technologies | 3 | 0 | 0 | 3 |
| 2 | R20CSM3204 | DevOps | 3 | 0 | 0 | 3 |
| 3 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 4 | **Professional Elective–III** | | 3 | 0 | 0 | 3 |
| | R20CSM3201 | Natural Language Processing | | | | |
| | R20CSE3231 | Software Testing Methodologies | | | | |
| | R20CSM3202 | Data Visualization Techniques | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20MAC3200 | MOOCs-II | | | | |
| 5 | | **Open Elective-I** | 3 | 0 | 0 | 3 |
| 6 | R20CSE32L1 | Machine Learning Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSM32L1 | Web Technologies Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| 9 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **1** | **8** | **20** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. CSE (ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Neural Networks & Deep Learning | 3 | 0 | 0 | 3 |
| 2 | | Reinforcement Learning | 2 | 0 | 0 | 2 |
| 3 | **Professional Elective - IV** | | 3 | 0 | 0 | 3 |
| | | Quantum Computing | | | | |
| | | Expert Systems | | | | |
| | | Cloud Computing | | | | |
| | | Game Theory | | | | |
| | | Mobile Computing | | | | |
| 4 | **Professional Elective - V** | | 3 | 0 | 0 | 3 |
| | | Social Network Analysis | | | | |
| | | Federated Machine Learning | | | | |
| | | Augmented Reality & Virtual Reality | | | | |
| | | Web Security | | | | |
| | | Ad-hoc & Sensor Networks | | | | |
| 5 | **Open Elective - II** | | 3 | 0 | 0 | 3 |
| 6 | | Deep Learning Lab | 0 | 0 | 2 | 1 |
| 7 | | Technical Seminar | 0 | 0 | 2 | 1 |
| 8 | | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| 9 | | Industrial Oriented Mini Project/ Summer Internship | 0 | 0 | 0 | 2 |
| | | **Total Credits** | **14** | **0** | **10** | **21** |

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | | Organizational Behaviour | 3 | 0 | 0 | 3 |
| 2 | **Professional Elective - VI** | | 3 | 0 | 0 | 3 |
| | | Speech and Video Processing | | | | |
| | | Robotics Process Automation | | | | |
| | | Randomized Algorithms | | | | |
| | | Cognitive Computing | | | | |
| | | Semantic Web | | | | |
| 3 | **Open Elective - III** | | 3 | 0 | 0 | 3 |
| 4 | | Project Work | 0 | 0 | 14 | 7 |
| | | **Total Credits** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

# Department of

## Artificial Intelligence & Data Science

# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

**B. Tech. - ARTIFICIAL INTELLIGENCE (AI) AND DATA SCIENCE**

**I YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1101 | Mathematics – I (Linear Algebra and Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20ECH1101 | Chemistry | 3 | 1 | 0 | 4 |
| 3 | R20EEE1101 | Basic Electrical Engineering | 3 | 0 | 0 | 3 |
| 4 | R20MED1101 | Engineering Workshop | 1 | 0 | 3 | 2.5 |
| 5 | R20HAS1101 | English | 2 | 0 | 0 | 2 |
| 6 | R20ECH11L1 | Engineering Chemistry Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20HAS11L2 | English Language and Communication Skills lab | 0 | 0 | 2 | 1 |
| 8 | R20EEE11L3 | Basic Electrical Engineering Lab | 0 | 0 | 2 | 1 |
| 9 | R20HAS1102 | Environmental Science | 3 | 0 | 0 | 0 |
| 10 | R20IPG1101 | Induction Programme for Three Weeks | 0 | 0 | 0 | 0 |
| **Total Credits** | | | **15** | **2** | **10** | **19** |

**I YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20MTH1201 | Mathematics – II (Advanced Calculus) | 3 | 1 | 0 | 4 |
| 2 | R20EAP1201 | Applied Physics | 3 | 1 | 0 | 4 |
| 3 | R20CSE1101 | Programming for Problem Solving | 3 | 1 | 0 | 4 |
| 4 | R20MED1102 | Engineering Graphics | 1 | 0 | 4 | 3 |
| 5 | R20EAP12L1 | Applied Physics Lab | 0 | 0 | 3 | 1.5 |
| 6 | R20CSE11L2 | Programming for Problem Solving Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20ITK1101 | Essence of Indian Traditional Knowledge | 3 | 0 | 0 | 0 |
| **Total Credits** | | | **13** | **3** | **10** | **18** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

**(An Autonomous Institution under UGC, New Delhi)**

## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - ARTIFICIAL INTELLIGENCE (AI) & DATA SCIENCE

**II YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2201 | Discrete Mathematics | 3 | 0 | 0 | 3 |
| 2 | R20CSE2101 | Data Structures | 3 | 0 | 0 | 3 |
| 3 | R20MTH2104 | Mathematical and Statistical Foundations | 3 | 1 | 0 | 4 |
| 4 | R20CSE2102 | Computer Organization & Architecture | 3 | 0 | 0 | 3 |
| 5 | R20CSE2104 | Python Programming | 2 | 0 | 0 | 2 |
| 6 | R20MBA2201 | Business Economics & Financial Analysis | 3 | 0 | 0 | 3 |
| 7 | R20CSE21L1 | Data Structures Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE21L4 | Python Programming Lab | 0 | 0 | 3 | 1.5 |
| 9 | R20MAC2100 | Gender Sensitization Lab **(**An Activity-based Course) | 0 | 0 | 2 | 0 |
| | | Total Credits | **17** | **1** | **8** | **21** |

**II YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE2206 | Formal Language and Automata Theory | 3 | 0 | 0 | 3 |
| 2 | R20CSE2207 | Software Engineering | 3 | 0 | 0 | 3 |
| 3 | R20CSE2202 | Operating Systems | 3 | 0 | 0 | 3 |
| 4 | R20CSE2203 | Database Management Systems | 3 | 1 | 0 | 4 |
| 5 | R20CSE2204 | Java Programming | 3 | 1 | 0 | 4 |
| 6 | R20CSE22L1 | Operating Systems Lab | 0 | 0 | 3 | 1.5 |
| 7 | R20CSE22L2 | Database Management Systems Lab | 0 | 0 | 3 | 1.5 |
| 8 | R20CSE22L3 | Java Programming Lab | 0 | 0 | 2 | 1 |
| 9 | R20MAC2200 | Intellectual Property Rights | 3 | 0 | 0 | 0 |
| | | Total Credits | **18** | **2** | **8** | **21** |

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# SRI INDU COLLEGE OF ENGINEERING & TECHNOLOGY

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - Artificial Intelligence & Data Science

### III YEAR I SEMESTER COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSE3203 | Design and Analysis of Algorithms | 3 | 1 | 0 | 4 |
| 2 | R20AID3102 | Introduction to Data Science | 3 | 0 | 0 | 3 |
| 3 | R20INF3102 | Computer Networks | 3 | 0 | 0 | 3 |
| 4 | R20CSE3122 | Artificial Intelligence | 3 | 0 | 0 | 3 |
| 5 | **Professional Elective-I** | | 3 | 0 | 0 | 3 |
| | R20CSE3105 | Graph Theory | | | | |
| | R20CSE3107 | Advanced Computer Architecture | | | | |
| | R20ECE4131 | Digital Image Processing | | | | |
| | R20INF3102 | Computer Graphics | | | | |
| | | MOOCs-I | | | | |
| 6 | **Professional Elective-II** | | | | | |
| | R20CSM3103 | Multimedia and Spatial Databases | 3 | 0 | 0 | 3 |
| | R20CSE4142 | Information Retrieval Systems | | | | |
| | R20CSE4153 | Software Process & Project Management | | | | |
| | R20CSM3104 | Computer Vision and Robotics | | | | |
| | R20AID3204 | Data Warehousing and Business Intelligence | | | | |
| 7 | R20CSE22L4 | Computer Networks Laboratory | 0 | 0 | 2 | 1.5 |
| 8 | R20CSM31L1 | Artificial Intelligence Laboratory | 0 | 0 | 3 | 1.5 |
| 9 | R20AID31L1 | Introduction to Data Science Using R Lab | 0 | 0 | 2 | 2 |
| | | **Total** | **18** | **1** | **07** | **24** |

### III YEAR II SEMESTER COURSE STRUCTURE

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CSM3202 | Data Visualization Techniques | 3 | 0 | 0 | 3 |
| 2 | R20CSE3201 | Machine Learning | 3 | 1 | 0 | 4 |
| 3 | R20CSD3201 | Big Data Analytics | 3 | 0 | 0 | 3 |
| 4 | **Professional Elective – III** | | 3 | 0 | 0 | 3 |
| | R20CSM3201 | Natural Language Processing | | | | |
| | R20CSE3204 | Software Testing Methodologies | | | | |
| | R20CSE3233 | Mobile Application Development | | | | |
| | R20CSE4101 | Cryptography and Network Security | | | | |
| | | MOOCs-II | | | | |
| 5 | **Open Elective-I** | | 3 | 0 | 0 | 3 |
| 6 | R20COI1101 | Constitution of India | 3 | 0 | 0 | 0 |
| 7 | R20CSE32L6 | Machine Learning Laboratory | 0 | 0 | 3 | 1.5 |
| 8 | R20AID21L1 | Big Data Analytics Laboratory | 0 | 0 | 3 | 1.5 |
| 9 | R20HAS31L1 | Advanced Communication Skills Lab | 0 | 0 | 2 | 1 |
| | | **Total** | **18** | **1** | **8** | **20** |

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## Choice Based Credit System (CBCS)

**REGULATIONS – BR20**

## B. Tech. - Artificial Intelligence & Data Science

**IV YEAR I SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20AID4101 | Introduction to Predictive Analytics | 2 | 0 | 0 | 2 |
| 2 | R20CSM4101 | Neural Networks & Deep Learning | 3 | 0 | 0 | 3 |
| 3 | **Professional Elective –IV** | | 3 | 0 | 0 | 3 |
| | R20CSE4102 | Quantum Computing | | | | |
| | R20CSM4104 | Expert Systems | | | | |
| | R20CSE4142 | Cloud Computing | | | | |
| | R20CSM4106 | Game Theory | | | | |
| | R20CSM4102 | Mobile Computing | | | | |
| 4 | **Professional Elective -V** | | 3 | 0 | 0 | 3 |
| | R20CSM4203 | Social Network Analysis | | | | |
| | R20CSM4201 | Federated Machine Learning | | | | |
| | R20CSE4201 | Augmented Reality & Virtual Reality | | | | |
| | R20CSI4101 | Web Security | | | | |
| | R20INF4101 | Ad-hoc & Sensor Networks | | | | |
| 5 | **Open Elective - II** | | 3 | 0 | 0 | 3 |
| 6 | R20CSM41L1 | Deep Learning Laboratory | 0 | 0 | 2 | 1 |
| 7 | | Technical Seminar | 0 | 0 | 2 | 1 |
| 8 | | Comprehensive Viva-voce | 0 | 0 | 6 | 3 |
| 9 | | Industrial Oriented Mini Project/Summer Internship | 0 | 0 | 0 | 2 |
| | | **Total** | **14** | **0** | **10** | **21** |

**IV YEAR II SEMESTER** **COURSE STRUCTURE**

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| **1** | R20HMS4201 | Organizational Behaviour | **3** | **0** | **0** | **3** |
| 2 | **Professional Elective – VI** | | | | | |
| | R20AID4202 | Speech and Video Processing | 3 | 0 | 0 | 3 |
| | R20MED4202 | Robotic Process Automation | | | | |
| | R20CSD4202 | Randomized Algorithms | | | | |
| | R20CSM4202 | Cognitive Computing | | | | |
| | R20CSM4204 | Semantic Web | | | | |
| 3 | **Open Elective – III** | | 3 | 0 | 0 | 3 |
| 4 | | Project Work | 0 | 0 | 14 | 7 |
| | | **Total** | **9** | **0** | **14** | **16** |

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# LIST OF OPEN ELECTIVES

## Open Elective – I

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV3271 | Disaster Management & Mitigation | 3 | 0 | 0 | 3 |
| 2 | R20CSE3272 | Database Concepts | | | | |
| 3 | R20ECE3273 | Consumer Electronics | | | | |
| 4 | R20EEE3274 | Electrical Estimation & Costing | | | | |
| 5 | R20INF3275 | Information Technology Essentials | | | | |
| 6 | R20MED3276 | Introduction to Robotics | | | | |
| 7 | R20HMS3277 | Fundamentals of Entrepreneurship | | | | |
| 8 | R20HMS3278 | Day to Day Biology | | | | |

## Open Elective –II

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4181 | Green Building Engineering | 3 | 0 | 0 | 3 |
| 2 | R20CSE4182 | Cyber Security Fundamentals | | | | |
| 3 | R20ECE4183 | Principles of Modern Communication Systems | | | | |
| 4 | R20EEE4184 | Illumination Engineering | | | | |
| 5 | R20INF4185 | E-Commerce | | | | |
| 6 | R20MED4186 | Industrial Design & Ergonomics | | | | |
| 7 | R20HMS4187 | Creative Writing | | | | |
| 8 | R20HMS4188 | Design Thinking | | | | |
| 9. | | MOOC - III | | | | |

## Open Elective –III

| S. No. | Course Code | Course Title | L | T | P | Credits |
|---|---|---|---|---|---|---|
| 1 | R20CIV4293 | Remote Sensing Concepts | 3 | 0 | 0 | 3 |
| 2 | R20CSE4292 | Fundamentals of Soft Computing | | | | |
| 3 | R20ECE4293 | Audio & Video Engineering | | | | |
| 4 | R20EEE4294 | Non Conventional Energy Resources | | | | |
| 5 | R20INF4295 | Information Security Fundamentals | | | | |
| 6 | R20MED4296 | Total Engineering Quality Management | | | | |
| 7 | R20HMS4297 | Human Values & Professional Ethics for Engineers | | | | |
| 8 | R20HMS4298 | Science Fiction | | | | |
| 9 | | MOOC - IV | | | | |

SRI INDU COLLEGE OF ENGG. & TECH.

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