**New Final Curriculum Structure for Academic Year 2018-19 Mechanical Engineering Department, GCOEJ**

**OPTION –II**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON**

**Scheme for Semester I of First Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Name of the Course** | **Group** | **Teaching Scheme\***  **Hrs /Week** | | | | **Evaluation Scheme** | | | | | | **Credits** |
| **Theory** | | | **Practical** | | **Total** |
| **L** | **T** | **P** | **Total** | **MSE** | **ISA** | **ESE** | **ICA** | **ESE** |
| **SH100AU** | **Induction Program** | **Mandatory audit course of three weeks duration as per AICTE model curriculum** | | | | | | | | | | | **AU** |
| SH101U | Differential Calculus | BS | 3 | 1 | -- | 4 | 30 | 10 | 60 | -- | -- | 100 | 4 |
| SH152U | Engineering Physics | BS | 3 | -- | -- | 3 | 30 | 10 | 60 | -- | -- | 100 | 3 |
| ME151U | Engineering Graphics and Drafting | BE | 3 | -- | -- | 3 | 30 | 10 | 60 | -- | -- | 100 | 3 |
| CE151U | Engineering Mechanics | BE | 3 | 1 | -- | 4 | 30 | 10 | 60 | -- | -- | 100 | 4 |
| ME152U | General Workshop Practices | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| SH153U | Engineering Physics Lab | BS | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| ME153U | Engineering Graphics and Drafting Lab | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| CE152U | Engineering Mechanics Lab | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| **Total** | | | **12** | **2** | **8** | **22** | **120** | **40** | **240** | **200** | -- | **600** | **18** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

**ESE:** End Semester Examination **ICA:** Internal Continuous Assessment

**\* Commencement of first semester of UG engineering program is generally delayed by 4 - 5 weeks as compared with higher semesters due to admission procedure. In addition, as per AICTE directives there is Induction Program of three weeks at the beginning of first semester. Thus the effective teaching in first semester may be only for 8 – 9 weeks. Therefore, one hour per week theory / laboratory teaching should be added in the regular load shown in the curriculum structure so that the syllabus can be completed in 8 - 9 weeks available in first semester of UG program.**

**Note:**

**1. ESE (TH) duration for ME151U is four hours and that for all other theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON**

**Scheme for Semester II of First Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course Code** | **Name of the Course** | **Group** | **Teaching Scheme**  **Hrs /Week** | | | | **Evaluation Scheme** | | | | | | **Credits** |
| **Theory** | | | **Practical** | | **Total** |
| **L** | **T** | **P** | **Total** | **MSE** | **ISA** | **ESE** | **ICA** | **ESE** |
| SH151U | Integral Calculus | BS | 3 | 1 | -- | 4 | 30 | 10 | 60 | -- | -- | 100 | 4 |
| SH102U | Engineering Chemistry | BS | 3 | -- | -- | 3 | 30 | 10 | 60 | -- | -- | 100 | 3 |
| EE101U | Elements of Electrical Engineering | BE | 2 | -- | -- | 2 | 30 | 10 | 60 | -- | -- | 100 | 2 |
| ET151U | Basic Electronics and Measurement Techniques | BE | 3 | -- | -- | 3 | 30 | 10 | 60 | -- | -- | 100 | 3 |
| CO101U | Programming for Problem Solving | BE | 3 | -- | -- | 3 | 30 | 10 | 60 | -- | -- | 100 | 3 |
| SH104U | Communication Skills | HM | 1 | -- | -- | 1 | 15 | 05 | 30 | -- | -- | 50 | 1 |
| SH105U | Communication Skills Lab | HM | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| ME101U | Mechanical Workshop Practices | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| SH103U | Engineering Chemistry Lab | BS | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| EE102U | Elements of Electrical Engineering Lab | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| ET152U | Basic Electronics and Measurement Techniques Lab | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| CO102U | Programming for Problem Solving Lab | BE | -- | -- | 2 | 2 | -- | -- | -- | 50 | -- | 50 | 1 |
| **SH150AU** | **Environment Science** | **Mandatory audit course in self learning mode equivalent to study of 3 hrs/week** | | | | | | | **60** | **--** | **--** | **60** | **AU** |
| **Total** | | | **15** | **1** | **12** | **28** | **165** | **55** | **390** | **300** | -- | **910** | **22** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

**ESE:** End Semester Examination **ICA:** Internal Continuous Assessment

**Note:**

**1. ESE (TH) duration for SH104U is two hours and that for all other theory courses is three hours.**

**2. MSE (TH) duration for SH104U is one hours and that for all other theory courses is two hours.**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON**

**Scheme for Semester III of Second Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs /week** | | | | **Evaluation Scheme** | | | | | | **Credits** |
|  | | | | **Theory** | | | **Practical** | | **Total** |
| **L** | **T** | **P** | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |
| ME201U | Fluid Mechanics | PC | 3 | -- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| EE221U | Electrical Machines and Drives | BE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME202U | Thermodynamics | PC | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
| ME203U | Manufacturing Processes | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME 204U | Strength of Materials | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| SH299U | Effective Technical Communication | HM | -- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| EE222U | Electrical Machines and Drives Lab | BE | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME205U | Fluid Mechanics Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME206U | Thermodynamics Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME207U | Workshop Practice-III | PC | --- | --- | 2 | 2 | --- | --- | --- | 50 | -- | 50 | 1 |
| **SH200AU** | **Essence of Indian Traditional Knowledge** | **HM** | **‑** | **‑** | **‑** | **‑** | **‑** | **‑** | **60** | **‑** | **‑** | **60** | **AU** |
|  | **Total** | | **15** | **1** | **10** | **26** | **50** | **150** | **360** | **150** | **100** | **810** | **21** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Note:**

**1. ESE (TH) duration all theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**3. SH200AU Essence of Indian Traditional Knowledge is mandatory non-credit audit course.**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON.**

**Scheme for Semester IV of Second Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs /week** | | | | **Evaluation Scheme** | | | | | | **Credits** |
| **Theory** | | | **Practical** | | **Total** |
| **L** | **T** | **P** | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |
| SH271U | Engineering Mathematics | BS | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
| ME251U | Theory of Machine-I | PC | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
| ME252U | Advanced Manufacturing Processes | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME253U | Material Science and Engineering  Metallurgy | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME254U | Machine Drawing and Computer  Graphics | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME255U | Theory of Machine –I Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME256U | Material Science and Engineering  Metallurgy Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME257U | Machine Drawing and Computer  Graphics Lab | PC | --- | --- | 4 | 4 | --- | --- | --- | 50 | 50 | 100 | 2 |
| ME258U | Workshop Practice –IV | PC | --- | --- | 2 | 2 | --- | --- | --- | 50 | -- | 50 | 1 |
| **SH 250AU** | **Introduction to the Constitution of India** | **HM** | **--** | **‑** | **‑** | **‑** | **‑** | **‑** | **60** | **‑** | **‑** | **60** | **AU** |
|  | **Total** |  | **15** | **2** | **10** | **27** | **50** | **150** | **360** | **150** | **100** | **810** | **22** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Note:**

**1. ESE (TH) duration for ME254U is four hours and that for all other theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**3. Course SH250AU Introduction to the Constitution of India is mandatory non-credit audit course.**

**4.Course ME409U Professional Internship of minimum 6 weeks duration shall be completed during vacation ofIV semester onwards and will be assessed inVII semester.**

**Option-II**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON.**

**Scheme for Semester V of Third Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs /week** | | | | **Evaluation Scheme** | | | | | **Total** | **Credits** |
| **Theory** | | | **Practical** | |
| **L** | **T** | **P** | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |
| ME301U | Machine Design-I | PC | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
| ME302U | Theory of Machines-II | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME303U | Open Elective-I | OE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME304U | Professional Elective-I | PE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME305U | Heat Transfer | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME306U | Mechanical Measurement | PC | 1 | --- | 2 | 3 | --- | --- | --- | 50 | --- | 50 | 2 |
| ME307U | Machine Design -I Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME308U | Theory of Machines -II Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME309U | Professional Elective -I Lab | PE | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME310U | Heat Transfer Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| **ME451U** | **Project and Financial Management** | **HM** | **3** | **---** | **---** | **3** | **10** | **30** | **60** | **---** | **---** | **100** | **3** |
|  | **Total** | | **19** | **1** | **10** | **30** | **60** | **180** | **360** | **150** | **100** | **850** | **25** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Open Elective I:**

1. Heating, Ventilation and Air Conditioning
2. Power Station Engineering

**Professional Elective I:**

1. Non Conventional Energy Sources
2. Internal Combustion Engine
3. Mechanism Design
4. Production Technology

**Note:**

**1. ESE (TH) duration for ME301U is four hours and that for all other theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**Option-II**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON.**

**Scheme for Semester VI of Third Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs /week** | | | | **Evaluation Scheme** | | | | |  | **Credits** |
| **Theory** | | | **Practical** | | **Total** |  |
| **L** | **T** | **P** | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |  |  |
| ME351U | Metrology and Quality control | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME352U | Turbo Machinery | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME353U | Machine Design -II | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME354U | Numerical Analysis and Computational Methods | PC | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
|
| ME 355U | Professional Elective-II | PE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME 356U | Open Elective-II | OE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME357U | Metrology and Quality Control Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME358U | Turbo Machinery Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME359U | Professional Elective-II Lab | PE | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME360U | Mini Project | PS | ---- | ---- | 2 | 2 | --- | --- | --- | 50 | --- | 50 | 2 |
| **ME452U** | **Industrial Engineering and**  **Management** | **HM** | **3** | **---** | **---** | **3** | **10** | **30** | **60** | **---** | **---** | **100** | **3** |
|  | **Total** |  | **21** | **1** | **8** | **30** | **70** | **210** | **420** | **125** | **75** | **900** | **27** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Programme Elective II:**

1. Non Conventional Energy Sources.
2. Mechatronics.
3. Process Equipment Design.
4. Tool Engineering

**Open Elective II:**

1. Power Plant Engineering Electrical and Hybrid Vehicle.
2. Total Quality Management

**Professional Elective II:**

1. Power Plant Engineering
2. Mechatronics
3. Process Equipment Design
4. Tool Engineering

**Open Elective II:**

1. Total Quality Management
2. Electrical and Hybrid vehicle

**Note:**

**1. ESE (TH) duration all theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**Option-II**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON.**

**Scheme for Semester VII of Forth Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs/week** | | | | **Evaluation Scheme** | | | | | **Total** | **Credits** |
| **Theory** | | | **Practical** | |
| **L** | **T** | **P** | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |
| ME401U | Operations Research | HM | 3 | 1 | --- | 4 | 10 | 30 | 60 | --- | --- | 100 | 4 |
| ME402U | Professional Elective -III | PE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME403U | Professional Elective -IV | PE | 3 | --- | -- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME404U | Open Elective-III | OE | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME405U | CAD/CAM | PC | 3 | --- | --- | 3 | 10 | 30 | 60 | --- | --- | 100 | 3 |
| ME406U | Professional Elective -III Lab | PE | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME407U | CAD/CAM Lab | PC | --- | --- | 2 | 2 | --- | --- | --- | 25 | 25 | 50 | 1 |
| ME409U | Industrial Lectures | PS | 1 | --- | --- | 1 | --- | --- | --- | 50 | --- | 50 | 1 |
| ME410U | Professional Internship | PS | --- | --- | --- | --- | --- | --- | --- | 50 | --- | 50 | 2 |
| **ME453U** | **Professional Elective -V** | **PE** | **3** | **1** | **---** | **4** | **10** | **30** | **60** | **---** | **---** | **100** | **4** |
| **ME455U** | **Professional Elective -V Lab** | **PE** | **---** | **---** | **2** | **2** | **---** | **---** | **---** | **25** | **25** | **50** | **1** |
|  |  | **Total** | **19** | **2** | **6** | **27** | **60** | **180** | **360** | **175** | **75** | **850** | **26** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Programme Elective III:**

1. Refrigeration and Air Conditioning.
2. Advanced Machine Design.
3. Tribology.
4. Advanced Manufacturing Technology.

**Open Elective III:**

1. Introduction to Robotics.
2. Operational Research and Project Management

**Professional Elective III:**

1. Refrigeration and Air Conditioning
2. Advanced Machine Design
3. Tribology
4. Advanced Manufacturing Technology

**Open Elective III:**

1. Introduction to Robotics
2. Operational Research and Project Management

**Professional Elective IV: Professional Elective -V:**

**A.** Industrial Robotics **A.** Design of Heat Exchanger

**B.** Material Management and Cost Estimation **B.** Finite Element Method

**C.** Production Planning and Control **C.** Advanced Mechanism

**D**. Product Design and Development **D.** Steam Technology

**Note:**

**1. ESE (TH) duration all theory courses is three hours.**

**2. MSE (TH) duration for all theory courses is two hours.**

**3. Course ME454U Professional Elective –VI in semester VIII (Credit transfer through online MOOCS/NPTEL/SWAYAM courses etc) can be completed by the students either in VII semester or VIII semester and it will be assessed in VIII semester only.**

**Option-II**

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON.**

**Scheme for Semester VIII of Forth Year B. Tech. (Mechanical Engineering) Academic Year 2018-19**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Course**  **Code** | **Name of the Course** | **Group** | **Teaching Scheme Hrs/week** | | | | | **Evaluation Scheme** | | | | | **Total** | **Credits** |
| **Theory** | | | **Practical** | |
| **L** | **T** | **P** | | **Total** | **ISA** | **MSE** | **ESE** | **ICA** | **ESE** |
| ME454U | Professional Elective -VI | PE | Credit transfer through online MOOCS/NPTEL/SWAYAM courses etc. | | | | | | | 60 | --- | --- | 100 | 3 |
| ME457U | Seminar | PS | --- | --- | 2 | 2 | | --- | --- | --- | 50 | --- | 50 | 2 |
| ME458U | Project**$** | PS | --- | --- | 4 | 4 | | --- | --- | --- | 100 | 100 | 200 | 6 |
|  |  | **Total** |  |  | **6** | **6** | |  |  | **60** | **150** | **100** | **350** | **11** |

**L:** Lecture **T:** Tutorial **P:** Practical **MSE:** Mid Semester Examination **ISA:** Internal Sessional Assessment

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**Professional Elective -VI:**

**A.**Automobile Engineering

**B.**Computational Fluid Dynamics

**C.**Machine Tool Design

**D.**Advanced Production Processes

**E.** Any other course approved by department

**Note: 1. ESE (TH) duration for all theory courses is three hours.**

**2. $- Project shall be preferably industry based.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Sr.**  **No.** | **Category** | **Group Code** | **AICTE Breakup of 160**  **Credits.** | **Suggested Breakup of 172**  **Credits. (APEC)** | **Actual Credits** |
| 1 | Humanities, Social Science and Management  (including communication skill) | HM | 12 | 15 | **13** |
| 2 | Basic Sciences | BS | 25 | 21 | **20** |
| 3 | Basic Engg./Skills | BE | 24 | 27 | **26** |
| 4 | Professional/Program Core | PC | 48 | 64 | **68** |
| 5 | Professional/Program Electives  (Six Courses – one each in V and VI semester and two each in VII and VIII semester with one lab in each semester) | PE | 18 | 22 | **23** |
| 6 | Open/Inter Disciplinary Elective (Three  courses- one course each in V, VI and VII semester without lab component) | OE | 18 | 9 | **9** |
| 7 | Project, Seminar, Industrial  Visit/Training/Lecture | PS | 15 | 14 | **13** |
| 8 | Mandatory Courses like induction program, environmental studies and any other as  approved by academic council | CM | -- | Non Credit | **--** |
| Total | | | 160 | 172 | **172** |