Structure & Syllabus of B.Tech. (Mechanical Engineering) **Pattern ‘F-11 revised’** **effective from Academic Year 2013-14**

**F.Y. B.Tech -MODULE 1**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | | **Type** | **Total Number of Contact Hours** | | | | **Credit** | | |
|  |  | |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  | | |
| HS10101 | Advanced Algebra and Analytical Geometry | | Theory | 3 |  |  | 3 | 3 | | |
| HS10103 | Modern Physics | | Theory | 3 |  |  | 3 | 3 | | |
| CH10101 | Chemistry | | Theory | 3 |  |  | 3 | 3 | | |
| ME10101 | Engineering Graphics | | Theory | 3 |  |  | 3 | 3 | | |
| HS10201 | Advanced Algebra and Analytical Geometry | | Tutorial |  |  | 1 | 1 | 1 | | |
| HS10203 | Modern Physics | | Tutorial |  |  | 1 | 1 | 1 | | |
| HS10107 | Communication Skill | | Theory | 2 |  |  | 2 | 1 | | |
| CH10301 | Science Lab (S2+S3) | | Lab |  | 2 |  | 2 | 1 | | |
| ME10301 | Engineering Graphics Lab | | Lab |  | 2 |  | 2 | 1 | | |
| HS17401 | Mini Project | | Lab |  | 2 |  | 2 | 2 | | |
| HS14301 | Engineering Workshop | | Lab |  | 2 |  | 2 | 1 | | |
| HS16101  HS16103  HS16105  HS16107 | @Elective Course:  Sociology  Psychology  Philosophy  Environmental Studies | | Theory | 2 |  |  | 2 | 2 | | |
|  | **Total** | |  | **16** | **10** | **2** | **28** | **23** | | |
| HS153XX | International Languages – I | | Lab |  | 2 |  |  | 1 | | |
| HS153XX | International Languages – II | | Lab |  | 2 |  |  | 1 | | |
| #The course Engineering Workshop and Communication Skill will be offered for both module I and module II in semester I, \*\* Students have to select and register for only one course from this group,  #\* Students will register only one course in Semester I irrespective of Module,  ##\* Students will be allotted level II of International language they registered in Sem I for Semester II irrespective of Module. | | | | | | | | | | |
| #\*  GP1 | HS15302 | French I | | ##\*  GP2 | HS15301 | English I | HS15305 | Japanese I | HS15309 | Japanese II |
| HS15303 | German I | | HS15302 | French I | HS15306 | French II | HS15310 | English II |
| HS15304 | Spanish I | | HS15303 | German I | HS15307 | German II |  |  |
| HS15305 | Japanese I | | HS15304 | Spanish I | HS15308 | Spanish II |  |  |

**F.Y. B.Tech -MODULE 2**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | | **Type** | **Total Number of Contact Hours** | | | | **Credit** | | |
|  |  | |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  | | |
| HS10102 | Differential and Integral Calculus | | Theory | 3 |  |  | 3 | 3 | | |
| HS10104 | Engineering Mechanics | | Theory | 3 |  |  | 3 | 3 | | |
| HS10106 | Electrical Technology | | Theory | 3 |  |  | 3 | 3 | | |
| CS10102 | Computer Programming | | Theory | 3 |  |  | 3 | 3 | | |
| HS10202 | Differential and Integral Calculus | | Tutorial |  |  | 1 | 1 | 1 | | |
| HS10204 | Engineering Mechanics | | Tutorial |  |  | 1 | 1 | 1 | | |
| HS10306 | Engineering Lab (S6+S7) | | Lab |  | 2 |  | 2 | 1 | | |
| CS10302 | Computer Programming Lab | | Lab |  | 2 |  | 2 | 1 | | |
| HS17402 | Mini Project | | Lab |  | 2 |  | 2 | 2 | | |
| HS17301 | General Seminar I | | Lab |  | 2 |  | 2 | 1 | | |
| HS14302 | Trade Workshop | | Lab |  | 2 |  | 2 | 1 | | |
| HS16102  HS16104  HS16106  HS16108 | @Elective Course  Economics  Management Technology  Cost and Accounting  Business Law | | Theory | 2 |  |  | 2 | 2 | | |
|  | **Total** | |  | **14** | **12** | **2** | **28** | **23** | | |
| HS153XX | International Languages – I | | Lab |  | 2 |  |  | 1 | | |
| HS153XX | International Languages – II | | Lab |  | 2 |  |  | 1 | | |
| #The course Engineering Workshop and Communication Skill will be offered for both module I and module II in semester I, \*\* Students have to select and register for only one course from this group,  #\* Students will register only one course in Semester I irrespective of Module,  ##\* Students will be allotted level II of International language they registered in Sem I for Semester II irrespective of Module. | | | | | | | | | | |
| #\*  GP1 | HS15302 | French I | | ##\*  GP2 | HS15301 | English I | HS15305 | Japanese I | HS15309 | Japanese II |
| HS15303 | German I | | HS15302 | French I | HS15306 | French II | HS15310 | English II |
| HS15304 | Spanish I | | HS15303 | German I | HS15307 | German II |  |  |
| HS15305 | Japanese I | | HS15304 | Spanish I | HS15308 | Spanish II |  |  |

**S.Y. B.Tech - MODULE 3**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
|  |  |  |  |  |  |  |  |
| ME 20103 | Kinematics and Mechanisms | Theory - Core | 3 | - | 1 | 4 | 4 |
| ME 21121 | Differential Equations And Vector Analysis | Theory – Core / MD | 3 | - | 1 | 4 | 4 |
| ME20113 | Material Science | Theory – Core | 3 | - | - | 3 | 3 |
| ME 20111 | Thermal Engineering | Theory – Core | 3 | - | - | 3 | 3 |
| ME20119 | Industrial Engineering | Theory – MD | 2 | - | - | 2 | 2 |
| ME 20311 | Thermal Engineering | Lab – Core | - | 2 | - | 2 | 1 |
| ME20315 | Mechanical Engineering Lab | Lab – Core / MD | - | 2 | - | 2 | 1 |
| ME 24304 | Geometric Modeling | Lab – SD | - | 2 | - | 2 | 1 |
| ME 27401 | Mini Project | Project | - | 4 | - | 4 | 2 |
| ME20405 | Comprehensive Viva Voce | Oral | - | - | - |  | 2 |
| **TOTAL** | | | **14** | **10** | **2** | **26** | **23** |

**S.Y. B.Tech - MODULE 4**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
|  |  |  |  |  |  |  |  |
| ME20114 | Manufacturing Processes | Theory - Core | 3 | - | 1 |  | 4 |
| ME 20102 | Strength of Machine Elements | Theory – Core / MD | 3 | - | 1 |  | 4 |
| ME21116 | Electronics Engineering | Theory – Core | 3 | - | - |  | 3 |
| ME 20108 | Fluid Mechanics | Theory – Core | 3 | - | - |  | 3 |
| ME21122 | Electrical Machines and Switchgear | Theory – MD | 2 | - | - |  | 2 |
| ME 20308 | Fluid Mechanics | Lab – Core | - | 2 | - |  | 1 |
| ME21320 | Electrical & Electronics Engineering | Lab – Core / MD | - | 2 | - |  | 1 |
| ME24301 | Workshop Practice | Lab – SD | - | 2 | - |  | 1 |
| ME 27402 | Mini Project | Project | - | 4 | - |  | 2 |
| ME20406 | Comprehensive Viva Voce | Oral | - | - | - |  | 2 |
| **TOTAL** | | | **14** | **10** | **2** |  | **23** |

**S.Y. B.Tech - Semester I – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
|  |  |  |  |  |  |  |  |
| ME20317 | Machine Drawing I | Lab – Core | - | 2 | - | 2 | 1 |
| HS20108 | Lab | Technical Writing | - | 2 | - | 2 | 1 |
|  | General Proficiency | GP | - | 2 | - | 2 | 1 |
| **TOTAL** | | | **-** | **6** | **-** | **6** | **3** |

**S.Y. B.Tech - Semester II – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
|  |  |  |  |  |  |  |  |
| ME20318 | Machine Drawing II | Lab – Core | - | 2 | - | 2 | 1 |
| HS20307 | Lab | General Seminar-II | - | 2 | - | 2 | 1 |
|  | General Proficiency | GP | - | 2 | - | 2 | 1 |
| **TOTAL** | | | **-** | **6** | **-** | **6** | **3** |

**T.Y. B.Tech - MODULE 5**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
|  |  |  |  |  |  |  |  |
| ME30113 | Fluid Machinery and Fluid Power Engineering | Theory - Core | 3 | - | 1 | 4 | 4 |
| ME30115 | Mechatronics | Theory – Core / MD | 3 | - | 1 | 4 | 4 |
| ME30109 | Internal Combustion Engine | Theory – Core | 3 | - | - | 3 | 3 |
| ME31117 | Production Metallurgy | Theory – MD | 2 | - | - | 2 | 2 |
| ME30309 | Internal Combustion Engine | Lab – Core | - | 2 | - | 2 | 1 |
| ME30313 | Fluid Machinery and Fluid Power Engineering | Lab – Core/MD | - | 2 | - | 2 | 1 |
| ME33325 | Measurement & Quality Control | Lab – PD | - | 2 | - | 2 | 1 |
| ME 30407 | Comprehensive Viva Voce | Oral | - | - | - |  | 2 |
| **TOTAL** | | | **11** | **6** | **2** | **19** | **18** |

**T.Y. B.Tech - MODULE 6**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
|  |  |  |  |  |  |  |  |
| ME30116 | Computational Methods in Mechanical Engineering | Theory - Core | 3 | - | 1 | 4 | 4 |
| ME30118 | Heat Transfer | Theory – Core / MD | 3 | - | 1 | 4 | 4 |
| ME30114 | Theory of Machines | Theory – Core | 3 | - | - | 3 | 3 |
| ME31120 | Production Technology | Theory – MD | 2 | - | - | 2 | 2 |
| ME30314 | Theory of Machines | Lab – Core | - | 2 | - | 2 | 1 |
| ME30318 | Heat Transfer | Lab – Core / MD | - | 2 | - | 2 | 1 |
| ME33326 | Computational Methods in Mechanical Engineering | Lab – PD | - | 2 | - | 2 | 1 |
| ME 30408 | Comprehensive Viva Voce | Oral | - | - | - |  | 2 |
| **TOTAL** | | | **11** | **6** | **2** | **19** | **18** |

**T.Y. B.Tech -Semester I – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
|  |  |  |  |  |  |  |  |
| ME 30111 | Mechanical Design | Theory –Core | 3 | - | - | 3 | 3 |
| ME30311 | Mechanical Design | Lab – Core | - | 2 | - | 2 | 1 |
| ME 37301 | Seminar | Seminar | - | 4 | - | 4 | 2 |
| ME 37405 | Mini Project | Project | - | 4 | - | 4 | 2 |
| **TOTAL** | | | **3** | **10** | **-** | **13** | **8** |

**T.Y. B.Tech -Semester II – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
|  |  |  |  |  |  |  |  |
| ME 30112 | Design of Machine Elements | Theory – Core | 3 | - | - | 3 | 3 |
| ME30312 | Design of Machine Elements Lab | Lab – Core | - | 2 | - | 2 | 1 |
| ME 37302 | Major Project-Stage I | Project | - | 4 | - | 4 | 2 |
| **TOTAL** | | | **3** | **6** | **-** | **9** | **6** |

**Final Year B.Tech - MODULE 7**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | | **Type** | **Total Number of Contact Hours** | | | | | | **Credits** |
|  |  | |  | **Lecture**  **(L)** | | **Practical**  **(P)** | **Tutorial**  **(T)** | | **Total Hours** |  |
|  |  | |  |  | |  |  | |  |  |
|  | Elective \* | | Theory - Core | 3 | | - | 1 | | 4 | 4 |
|  | Elective \*\* | | Theory – Core | 3 | | - | 1 | | 4 | 4 |
| ME 40101 | Design of Mechanical Systems | | Theory – Core | 3 | | - | - | | 3 | 3 |
| ME40103 | CAD/CAM/CAE | | Theory – Core | 3 | | - | - | | 3 | 3 |
| ME 40301 | Design of Mechanical Systems | | Lab – Core | - | | 2 | - | | 2 | 1 |
| ME40303 | CAD/CAM/CAE | | Lab – Core | - | | 2 | - | | 2 | 1 |
| **TOTAL** | | | | **12** | | **4** | **2** | | **18** | **16** |
| ***Elective\**** | | | | | |
| Heat Exchange Devices | | | ME42109 | | |
| Kinematic Analysis And Synthesis | | | ME42101 | | |
| Tribology | | | ME42103 | | |

**Final Year B.Tech - MODULE 8**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | | **Type** | | **Total Number of Contact Hours** | | | | | **Credits** |
|  |  | |  | | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | | **Total Hours** |  |
|  |  | |  | |  |  |  | |  |  |
|  | Elective$ | | Theory - Core | | 3 | - | 1 | | 4 | 4 |
|  | Elective $$ | | Theory – Core | | 3 | - | 1 | | 4 | 4 |
| ME 40106 | Vibration Analysis | | Theory – Core | | 3 | - | - | | 3 | 3 |
| ME 40108 | Refrigeration and Air Conditioning | | Theory – Core | | 3 | - | - | | 3 | 3 |
| ME 40306 | Vibration Analysis | | Lab – Core | | - | 2 | - | | 2 | 1 |
| ME 40308 | Refrigeration and Air Conditioning | | Lab – Core | | - | 2 | - | | 2 | 1 |
| **TOTAL** | | | | | **12** | **4** | **2** | | **18** | **16** |
| ***Elective$*** | |  | | | |
| Power Plant Engineering | | ME42118 | | | |
| Turbo Machines | | ME42111 | | | |
| Industrial Fluid Power | | ME42117 | | | |

**Final Year B.Tech Semester I – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
|  |  |  |  |  |  |  |  |
| ME47303 | Major Project –Stage II | Project | - | 8 | - | 8 | 4 |
| **TOTAL** | | | **-** | **8** | **-** | **8** | **4** |

**Final Year B.Tech Semester II – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
|  |  |  |  |  |  |  |  |
| ME47304 | Major Project-Stage III | Project | - | 12 | - | 12 | 6 |
| **TOTAL** | | | **-** | **12** | **-** | **12** | **6** |