Structure & Syllabus of B.Tech. (Mechanical Engineering) **Pattern ‘B-14’effective from Academic Year 2015-16**

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
| HS10109 | Linear  Algebra and  Random  Variables | Theory -  Core | 3 |  | **1** | 4 | 4 |
| HS10103 | Modern  Physics | Theory -  Core | 3 |  | 1 | 4 | 4 |
| CH10101 | Chemistry | Theory -  Core | 3 |  |  | 3 | 3 |
| ME10101 | Engineering  Graphics | Theory -  Core | 3 |  |  | 3 | 3 |
| HS16101  HS16103  HS16105  HS16107 | Sociology  Psychology  Philosophy  EVS | Theory –  OE | 2 |  |  | 2 | 2 |
| HS10301 | Engineering  Graphics Lab | Lab – Core |  | 2 |  | 2 | 1 |
| CH10301 | Science Lab | Lab – Core |  | 2 |  | 2 | 1 |
| HS17401 | Mini Project | Project |  | 4 |  | 4 | 2 |
|  | **TOTAL** | | **14** | **8** | **2** | **24** | **20** |

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

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | Total Hours |  |
| HS10102 | Differential  Integral and  Calculus | Theory -  Core | 3 |  | **1** | 4 | 4 |
| HS10104 | Engineering  Mechanics | Theory -  Core | 3 |  | 1 | 4 | 4 |
| HS10108 | Electrical  Engineering  Fundamentals | Theory -  Core | 3 |  |  | 3 | 3 |
| CS10102 | Computer  Programming | Theory -  Core | 3 |  |  | 3 | 3 |
| HS16102  HS16104  HS16106  HS16108 | Economics  Management  Technology  Cost & Acc.  Business Law | Theory –  OE | 2 |  |  | 2 | 2 |
| CS10302 | Computer  Programming | Lab – Core |  | 2 |  | 2 | 1 |
| HS10306 | Engineering  Lab | Lab – Core |  | 2 |  | 2 | 1 |
| HS17402 | Mini Project | Project |  | 4 |  | 4 | 2 |
|  | **TOTAL** | | **14** | **8** | **2** | **24** | **20** |

**FY B.Tech Semester I – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
| HS10107 | Communicati  on Skill | Comm.  Skill |  | 2 |  |  | 1 |
| HS153xx | General  Proficiency | GP |  | 2 |  |  | 1 |
| HS15301  HS15302  HS15303  HS15304  HS15305 | English I  French I  German I  Spanish I  Japanese I | Language |  | 2 |  |  | 1 |
| HS14301 | Engineering  Workshop | Workshop |  | 2 |  |  | 1 |
|  | **TOTAL** | |  | **8** |  |  | **4** |

**FY B.Tech Semester I – Irrespective of Module**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Code** | **Subject** | **Type** | **Total Number of Contact Hours** | | | | **Credits** |
|  |  |  | **Lecture**  **(L)** | **Practical**  **(P)** | **Tutorial**  **(T)** | **Total Hours** |  |
| HS17301 | General  seminar I | Seminar |  | 2 |  |  | 1 |
| HS153xx | General  Proficiency | GP |  | 2 |  |  | 1 |
| HS15306  HS15307  HS15308  HS15309  HS15310 | French II  German II  Spanish II  Japanese II  English II | Language |  | 2 |  |  | 1 |
| HS14302 | Trade  Workshop | Workshop |  | 2 |  |  | 1 |
|  | **TOTAL** | |  | **8** |  |  | **4** |

**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 | 4 |
| ME 20102 | Strength of Machine Elements | Theory – Core / MD | 3 | - | 1 | 4 | 4 |
| ME21116 | Electronics Engineering | Theory – Core | 3 | - | - | 3 | 3 |
| ME 20108 | Fluid Mechanics | Theory – Core | 3 | - | - | 3 | 3 |
| ME21122 | Electrical Machines and Switchgear | Theory – MD | 2 | - | - | 2 | 2 |
| ME 20308 | Fluid Mechanics | Lab – Core | - | 2 | - | 2 | 1 |
| ME21320 | Electrical & Electronics Engineering | Lab – Core / MD | - | 2 | - | 2 | 1 |
| ME24301 | Workshop Practice | Lab – SD | - | 2 | - | 2 | 1 |
| ME 27402 | Mini Project | Project | - | 4 | - | 4 | 2 |
| ME20406 | Comprehensive Viva Voce | Oral | - | - | - |  | 2 |
| **TOTAL** | | | **14** | **10** | **2** | **26** | **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 | Technical Writing | Lab | - | 2 | - | 2 | 1 |
| **TOTAL** | | | **-** | **4** | **-** | **4** | **2** |

**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 |
| **TOTAL** | | | **-** | **4** | **-** | **4** | **2** |

**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. 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** |