**Annexure-VI**

**BS Mechanical Engineering (For Semester System)**

**Composition of Curriculum for all semesters / years including details of Credit-hours**

**National/International Model being followed if any (In case of New Program):**

| **Course No.** | **Course Title** | **Knowledge Area** | **Sub Area** | **Credit Hours (Theory + Practical)** | **Contact Hours (Theory + Practical)** | **Total Credit Hours** | **Marks Theory** | **Marks Practical** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Semester-I** | | | | | | | | |
| HM 103 | English Grammar and Comprehension | Humanities | English | **2+0** | **2+0** | **2** | **100** | **0** |
| HM 111 | Islamic Studies/Ethics | Humanities |  | **2+0** | **2+0** | **2** | **100** | **0** |
| ME 101 | Engineering Drawing & Graphics | Engineering Foundation | Modelling | **1+2** | **1+6** | **3** | **100** | **100** |
| ME 122 | Engineering Mechanics-I: Statics | Engineering Foundation | Mechanics and Materials | **3+1** | **3+3** | **4** | **100** | **100** |
| EF 122 | Materials Engineering | Engineering Foundation | Mechanics and Materials | **2+1** | **2+3** | **3** | **100** | **100** |
| NS 128 | Applied Calculus | Natural Sciences | Mathematics | **3+0** | **3+0** | **3** | **100** | **0** |
| **Semester-II** | | | | | | | | |
| HM 106 | Composition and Communication | Humanities | English | **2+0** | **2+0** | **2** | **100** | **0** |
| NS 129 | Differential Equations | Natural Sciences | Mathematics | **3+0** | **3+0** | **3** | **100** | **0** |
| EF 113 | Workshop Practice | Engineering Foundation | Vocational Training | **0+2** | **0+6** | **2** | **0** | **100** |
| CS 143 | Programming Fundamentals | Computing | Fundamentals | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 131 | Thermodynamics-I | Engineering Foundation | Thermo & Fluids | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 123 | Engineering Mechanics-II: Dynamics | Engineering Foundation | Mechanics and Materials | **3+1** | **3+3** | **4** | **100** | **100** |
| **Semester-III** | | | | | | | | |
| HM 211 | Pakistan Studies | Humanities | Culture | **2+0** | **2+0** | **2** | **100** | **0** |
| ME 231 | Fluid Mechanics-I | Engineering Foundation | Thermo & Fluids | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 221 | Mechanics of Materials-I | Engineering Foundation | Mechanics and Materials | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 241 | Manufacturing Processes | Engineering Foundation | Manufacturing & Quality Control | **3+1** | **3+3** | **4** | **100** | **100** |
| NS 221 | Linear Algebra | Natural Sciences | Mathematics | **3+0** | **3+0** | **3** | **100** | **0** |
| **Semester-IV** | | | | | | | | |
| EE 205 | Basic Electrical Engineering | Interdisciplinary Engg. | Interdisciplinary Engg. | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 232 | Thermodynamics-II | Major Based Core (Breadth) | Thermo & Fluids | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 242 | Mechanical Measurements and Metrology | Engineering Foundation | Manufacturing & Quality Control | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 222 | Mechanics of Machines | Engineering Foundation | Mechanics and Materials | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 223 | Machine Design & CAD-I | Major Based Core (Breadth) | Mechanics, Materials & Design | **2+1** | **2+3** | **3** | **100** | **100** |
| **Semester-V** | | | | | | | | |
| ME 341 | Machine Tools & Machining | Major Based Core (Breadth) | Manufacturing & Quality Control | **2+1** | **2+3** | **3** | **100** | **100** |
| NS 321 | Numerical Analysis | Natural Sciences | Mathematics | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 331 | Fluid Mechanics-II | Major Based Core (Breadth) | Thermo & Fluids | **3+1** | **3+3** | **4** | **100** | **100** |
| NS 331 | Probability & Statistics | Natural Sciences | Statistics | **3+0** | **3+0** | **3** | **100** | **0** |
| ME 321 | Machine Design & CAD-II | Major Based Core (Breadth) | Mechanics, Materials & Design | **2+1** | **2+3** | **3** | **100** | **100** |
| **Semester-VI** | | | | | | | | |
| HM 302 | Technical Report Writing & Presentation Skills | Humanities | English | **2+0** | **2+0** | **2** | **100** | **0** |
| ME 332 | Heat & Mass Transfer | Major Based Core (Breadth) | Thermo & Fluids | **3+0** | **3+0** | **3** | **100** | **0** |
| ME 333 | Refrigeration & Air Conditioning | Major Based Core (Breadth) | Thermo & Fluids | **3+1** | **3+3** | **4** | **100** | **100** |
| ME 323 | Mechanics of Materials-II | Major Based Core (Breadth) | Mechanics, Materials &Design | **3+1** | **3+3** | **4** | **100** | **100** |
| HM 321 | Social and Ethical Aspects in Engineering | Humanities | Social Sciences | **3+0** | **3+0** | **3** | **100** | **0** |
| **Semester-VII** | | | | | | | | |
| ME 431 | Internal Combustion Engines | Major Based Core (Breadth) | Thermo & Fluids | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 421 | Mechanical Vibrations | Major Based Core (Breadth) | Mechanics, Materials & Design | **2+1** | **2+3** | **3** | **100** | **100** |
| ME 441 | Instrumentation and Control | Engineering Foundation | Manufacturing & Quality Control | **2+1** | **2+3** | **3** | **100** | **100** |
| HM 421 | Engineering Economics | Humanities | Social Sciences | **3+0** | **3+0** | **3** | **100** | **0** |
| ME 451 | Project Phase I | Senior Design Project |  | **0+3** | **0-6** | **3** |  |  |
| ME 4XY | Elective-I |  |  | **2+0** | **2+0** | **2** | **100** | **0** |
| **Semester-VIII** | | | | | | | | |
| ME 432 | Power Plants | Major Based Core (Breadth) | Thermo & Fluids | **2+1** | **2+3** | **3** | **100** | **100** |
| MS 403 | Production Management | Management Sciences | Engineering Management | **3+0** | **3+0** | **3** | **100** | **0** |
| ME 422 | Finite Element Analysis | Major Based Core (Breadth) | Mechanics, Materials & Design | **3+1** | **3+3** | **4** | **100** | **100** |
| MS 402 | Entrepreneurship | Management Sciences | Engineering Management | **3+0** | **3+0** | **3** | **100** | **0** |
| ME452 | Project Phase-II | Senior Design Project |  | **0+3** | **0-6** | **3** |  |  |
| ME4XY | Elective-II |  |  | **2+0** | **2+0** | **2** | **100** | **0** |

**List of Electives**

ME442 Environmental Engineering

ME 443 Health, Safety & Environment

ME433 Energy Resources & Utilization

ME434 Computational Fluid Dynamics

ME444 Mechatronics: Principles & Practices