**Indian Institute of Engineering Science and Technology, Shibpur**

Course Structure for Two-Year M.Tech Program (From 2019 Onward)

**Department of Aerospace Engineering and Applied Mechanics**

**Specialization ( Mechanics of Solids)**

**1st Semester**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | Credit | Marks |
| L | T | P |  |  |
| 1. | Paper I: Theory of Elasticity | AM 5101 | 3 | 0 | 0 | 3 | 100 |
| 2. | Paper II: Theory of Vibration | AM 5102 | 3 | 0 | 0 | 3 | 100 |
| 3. | Paper III: Finite Element Method in Solid Mechanics | AM 5103 | 3 | 0 | 0 | 3 | 100 |
| 4. | Paper IV: (Dep. Elective) (Any one) |  | 3 | 0 | 0 | 3 | 100 |
| 5. | Paper V: (Open Elective) [Other Dept.] |  | 3 | 0 | 0 | 3 | 100 |
|  | **Theory Sub-total** |  | **15** | **0** | **0** | **15** | **500** |
| 6. | Lab1 Programming in Solid Mechanics | AM5171 | 0 | 0 | 2 | 2 | 100 |
| 7. | Lab2 Software Aided Simulation in Solid Mechanics | AM5172 | 0 | 0 | 2 | 2 | 100 |
| 8. | Lab3 Mini Project on Mechanics of Solids | AM5173 | 0 | 0 | 2 | 2 | 100 |
|  | **Practical Sub-total** |  | **0** | **0** | **6** | **6** | **300** |
|  | 1st Semester Total |  | 15 | 0 | 6 | 21 | 800 |

**2nd Semester**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | Credit | Marks |
| L | T | P |  |  |
| 1. | Paper VI: Theory of Plasticity | AM5201 | 3 | 0 | 0 | 3 | 100 |
| 2. | Paper VII: Theory of Elastic Stability | AM5202 | 3 | 0 | 0 | 3 | 100 |
| 3. | Paper VIII: Mechanics of Plates & Shells | AM5202 | 3 | 0 | 0 | 3 | 100 |
| 4. | Paper IX (Dep. Elective) (Any One) |  | 3 | 0 | 0 | 3 | 100 |
| 5. | Paper X (Open Elective) [Other Dept.] |  | 3 | 0 | 0 | 3 | 100 |
|  | **Theory Subtotal** |  | **15** | **0** | **0** | **15** | **500** |
| 6. | M.Tech. Thesis Part I (Term Course) | AM5291 |  |  |  | 4 | 200 |
| 7. | Term Course Seminar & Viva Voce | AM5292 |  |  |  | 2 | 100 |
|  | **Practical Subtotal** |  |  |  |  | **6** | **300** |
|  | 2nd Semester Total |  | 15 | 0 | 0 | 21 | 800 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Paper IV [Departmental Elective]** | | **Paper IX [Departmental Elective]** | |
| **Course Code** | **Course Title** | **Course Code** | **Course Title** |
| AM5121  AM5122  AM5123 | Continuum Mechanics  Mechanics of Composite Materials  Biomechanics | AM5232  AM5234  AM5236  AM5238  AM5240  AM5242 | Engineering Optimization  Engineering Fracture Mechanics  Nonlinear Dynamics and Chaos  Stochastic Structural Dynamics  Micromechanics of Composites  Advanced Finite Element Method in Solid Mechanics |

**Indian Institute of Engineering Science and Technology, Shibpur**

Course Structure for Two-Year M.Tech Program (From 2019 Onward)

**Department of Aerospace Engineering and Applied Mechanics**

**Specialization ( Mechanics of Fluids)**

**1st Semester**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | Credit | Marks |
| L | T | P |  |  |
| 1. | Paper I: Viscous Fluid Flow | AM 5106 | 3 | 0 | 0 | 3 | 100 |
| 2. | Paper II: Convective Heat Transfer | AM 5107 | 3 | 0 | 0 | 3 | 100 |
| 3. | Paper III: Methods in Computational Fluid Dynamics | AM 5108 | 3 | 0 | 0 | 3 | 100 |
| 4. | Paper IV: (Dep. Elective) (Any one) |  | 3 | 0 | 0 | 3 | 100 |
| 5. | Paper V: (Open Elective) [Other Dept.] |  | 3 | 0 | 0 | 3 | 100 |
|  | **Theory Sub-total** |  | **15** | **0** | **0** | **15** | **500** |
| 6. | Lab1 Programming in Fluid Dynamics | AM5176 | 0 | 0 | 2 | 2 | 100 |
| 7. | Lab2 Experiments and Simulation in Fluid Dynamics | AM5177 | 0 | 0 | 2 | 2 | 100 |
| 8. | Lab3 Mini Project on Mechanics of Fluids | AM5178 | 0 | 0 | 2 | 2 | 100 |
|  | **Practical Sub-total** |  | **0** | **0** | **6** | **6** | **300** |
|  | 1st Semester Total |  | 15 | 0 | 6 | 21 | 800 |

**2nd Semester**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl. No | Course Name | Course code | Class Load/Week | | | Credit | Marks |
| L | T | P |  |  |
| 1. | Paper VI: Fluid Power Control System | AM5215 | 3 | 0 | 0 | 3 | 100 |
| 2. | Paper VII: Theory of Turbulence | AM5216 | 3 | 0 | 0 | 3 | 100 |
| 3. | Paper VIII: Compressible Flow | AM5217 | 3 | 0 | 0 | 3 | 100 |
| 4. | Paper IX (Dep. Elective) (Any One) |  | 3 | 0 | 0 | 3 | 100 |
| 5. | Paper X (Open Elective) [Other Dept.] |  | 3 | 0 | 0 | 3 | 100 |
|  | **Theory Subtotal** |  | **15** | **0** | **0** | **15** | **500** |
| 6. | M.Tech. Thesis Part I (Term Course) | AM5291 |  |  |  | 4 | 200 |
| 7. | Term Course Seminar & Viva Voce | AM5292 |  |  |  | 2 | 100 |
|  | **Practical Subtotal** |  |  |  |  | **6** | **300** |
|  | 2nd Semester Total |  | 15 | 0 | 0 | 21 | 800 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Paper IV [Departmental Elective]** | | **Paper IX [Departmental Elective]** | |
| **Course Code** | **Course Title** | **Course Code** | **Course Title** |
| AM5121  AM5126  AM5127  AM5128  AM5129 | Continuum Mechanics  Turbomachineries  Theory of Hydraulic Models  Water Wave Mechanics and Coastal Processes  Computational Aerodynamics | AM5232  AM5244  AM5246  AM5248 | Engineering Optimization  Parallel Computation in CFD  Instrumentation in Fluid Mechanics  Microfluidics |

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**Department of Aerospace Engineering and Applied Mechanics**

|  |  |  |  |
| --- | --- | --- | --- |
| **Paper V [Open Elective ] [For Other Dept. Students]** | | **Paper X [Open Elective] [For Other Dept. Students]** | |
| **Course Code** | **Course Title** | **Course Code** | **Course Title** |
| AM 5161  AM5162 | Mechatronics  Human Body Mechanics | AM5263  AM5264 | Free Surface Flow  Parallel Computation for Engineers |