

Courses under the MS-MSDE program

| S.N.   | Course Type                             | Course Title                                       |
|--|---|--|
| 1  | <b>Core Courses<br/>(Semester I/II)</b> | Solid Mechanics                                    |
| 2  |   | Advanced Thermodynamics and Heat Engines           |
| 3  |   | Finite Element Methods and Applications **         |
| 4  |   | Advanced Research Methods *                        |
| 5  |   | Advanced Fluid Mechanics and Machines              |
| 6  |   | Computational Fluid Dynamics **                    |
| <b>Elective Concentration: Engineering Mechanics and Materials</b> |   |  |
| 7  | <b>Elective- I Options</b>              | Mechanics of Materials                             |
| 8  |   | Vibration Theory **                                |
| 9  |   | Fracture Mechanics †                               |
| 10   |   | Multibody Dynamics                                 |
| 11   |   | Mechatronics **                                    |
| 12   |   | Dynamic Systems and Control **                     |
| 13   |   | Composite Materials                                |
| <b>Elective Concentration: Mechanical Design and Manufacturing</b> |   |  |
| 14   | <b>Elective – II Options</b>            | Modern Design Theory and Methodology               |
| 15   |   | Modern Manufacturing Technologies                  |
| 16   |   | Advanced Computer Aided Design and Manufacturing † |
| 17   |   | Hydraulic and Pneumatic Systems Design             |
| 18   |   | Heavy Equipment Engineering                        |
| 19   |   | Automotive Design and Manufacturing                |
| <b>Elective Concentration: Thermo-Fluids</b>                       |   |  |
| 20   | <b>Elective – III Options</b>           | Advanced Aerothermodynamics †                      |
| 21   |   | Heat and Mass Transfer †                           |
| 22   |   | Performance Analysis of Thermo-Fluid Systems       |

|   |   |
|---|---|
| 23  | Hydrodynamics and Fluid Structure Interaction **                |
| 24  | Applied Combustion Theory and Simulation **                     |
| <b>Elective Concentration: Industrial Practices</b> |   |
| 25  | Maintenance and Reliability Engineering                         |
| 26  | Human Factors Engineering                                       |
| 27  | Vehicle Communication and Navigation Systems                    |
| 28  | Heating, Ventilation and Air Conditioning                       |
| 29  | <b>Elective – IV Options</b> Building Services and Equipments † |
| 30  | Fault Monitoring and Diagnosis                                  |
| 31  | Tribology and Lubrication †                                     |
| 32  | Industrial Pollution Control                                    |
| 33  | Total Quality Management  |

\* Similar/Same courses available in the existing master's curriculum

\*\* Assignment/laboratory work within theory classes

† Additional laboratory/practical classes

#### Program entry requirements

In order to be eligible for admission for M.Sc. Mechanical Systems Design and Engineering (MSDE), a candidate must have:

- i. Bachelors' degree from a 4-year engineering program in Mechanical, Industrial, Aeronautical, and Automobile Engineering, or equivalent, from Tribhuvan University and other recognized universities as well as degree equivalent to any of the aforementioned branches of engineering.
- ii. Secure at least a minimum score as prescribed by the faculty board in the admission test conducted by the Institute of Engineering.