MSME Course Requirements

The MSME degree program requires a total of 30 credit hours to be completed, with thesis or non-thesis option. It is anticipated that the degree may be completed in two years of full time graduate study. To earn the Master of Science in Mechanical Engineering (MSME) degree, students must complete 30 credit hours, with an aggregate minimum grade point average of 3.0 for the courses listed in the Plan of Study.

Course requirements

- **One** advanced mathematics course (3 credit hours) at the 500-level taught by either the mathematics department or one of the engineering departments is required for both thesis and non-thesis options.

- **Thesis option** allows a student to earn credit for conducting independent research leading to a publishable report or thesis. This option requires 21 credit hours of advanced ME/mathematics coursework and a minimum of 9 credit hours of thesis research work. The thesis research is undertaken and completed under the supervision of a graduate faculty member and the thesis committee. The student’s thesis committee is responsible for approving the research plan, monitoring progress and reviewing the thesis prior to acceptance. Thesis option is normally available to students only after their completion of 9 credit hours with an overall grade point average of 3.0 or better in the degree program.
  - 3 credit hours of advanced mathematics at the 500-level taught by either the mathematics department or one of the engineering departments.
  - 18 credit hours (six (6) graduate courses) from the approved list of mechanical engineering primary courses (thermo-fluids, dynamics, structural mechanics, machine design).
  - 9 credit hours of research

- **For non-thesis option**, the course requirements are divided into three categories:
  - 3 credit hours of advanced mathematics at the 500-level taught by either the mathematics department or one of the engineering departments,
  - 24 credit hours (8 graduate courses) from the approved list of ME primary (thermo-fluids, dynamics, structural mechanics, machine design) courses, and
  - 3 credit hours (one course) from a list of approved courses in engineering, mathematics, statistics, computer science, physics, and life sciences. Any exceptions to the above requirements must be approved by the graduate committee.

List of some primary ME courses
1. ME 59700 / CE 57000 – Advanced Structural Mechanics
2. ME 59700 – Finite Element Analysis
3. ME 56300 – Mechanical Vibrations
4. ME 59700 – Musculoskeletal Biomechanics
5. ME 59700 – Theory of Plates and Shells
6. ME 50200 – Numerical Heat and Mass Transfer
7. ME 59700 – Computational Fluid Dynamics (CFD)
8. ME 51900 – Introduction to Wind Energy
9. ME 52100 – Air Quality Modeling
10. ME 52400 – HVAC&R (Design & Analysis)
11. ME 52300 – Electronics System Cooling
12. ME 58300 – Design of Heat Exchangers
13. ME 51100 – Combustion
14. ME 59700 – Two Phase Flow and Heat Transfer
15. ME 59700 – Matrix Analysis of Structures
16. ME 59700 – Modeling of Micro/Nano Systems
17. ME 59700 – Vehicle Dynamics
18. ME 50000 – Advanced Thermodynamics
19. ME 50500 – Intermediate Heat Transfer
20. ME 50900 – Fluid Properties
21. ME 51300 – Engineering Acoustics
22. ME 56000 – Kinematics
23. ME 57500 – Theory & Design of Control Systems
24. ME 58700 – Engineering Optics

List of some related courses
1. ME 59700 – Materials Selection for Design
2. ME 59700 – Numerical Methods for Engineers
3. ME 59700 – Optimization and Simulation Models
4. ME 59700 – Energy System
5. ME 59700 – Solid Waste Management
6. ME 54300 – Advanced Engineering Economics
7. ME 51600 – Adv. Engineering Project Management
8. ME 59700 – Adv. Mechanical Engineering Projects I
9. ME 53400 – Systems Engineering
10. ME 51500 – Quality Control

Updated 12-08-14