COLLEGE OF ENGINEERING

Accelerated B.S.M.E. in Mechanical Engineering and M.S.M.E. in Mechanical Engineering

Description

Students pursuing a B.S.M.E. in Mechanical Engineering will earn an M.S.M.E. in Mechanical Engineering in an accelerated manner by sharing two (2) core graduate courses (6 credit hours) taken as upper-level departmental electives as part of the undergraduate Mechanical Engineering major. The B.S.M.E. requires a total of 128 hours and the M.S.M.E. requires 30 hours. By sharing six (6) credit hours, the total credit hours earned will be 152 hours.

This accelerated program shares six (6) credit hours between already existing degrees:

B.S.M.E. in Mechanical Engineering
M.S.M.E. in Mechanical Engineering

Target Students and Expected Outcomes

Academically high achieving undergraduate students in the B.S.M.E. program with high overall and major GPA will be targeted for the accelerated program. Expected outcomes are the increase in M.S.M.E. degrees granted, increase in graduate SCH, and enhancement of the quality of the graduate program by addition of academically accomplished students.

Admission Requirements

For admission to the program, a student must:

1. Have completed 15 hours in the undergraduate major
2. Have a minimum 3.33 GPA overall; and
3. Have a minimum undergraduate 3.50 GPA in the major.

Timeline and Benchmarks:

1. To be considered for acceptance into the Accelerated B.S.M.E. in Mechanical Engineering/M.S.M.E. in Mechanical Engineering program, students must have completed a minimum of 15 credit hours in the Mechanical Engineering undergraduate major.
2. Students must have a minimum undergraduate GPA of 3.33 overall, and a minimum GPA of 3.50 in the Mechanical Engineering major.
3. Following completion of a minimum of 15 hours in the undergraduate major, students may be considered for acceptance into the accelerated program through faculty nomination or student self-nomination, via submission of an *Accelerated Program Application Form*. Both B.S.M.E. and M.S.M.E. majors will review the applications and approve the nominations. All applications require the approval of USF's Office of Graduate Studies, the College of Engineering's Graduate Program, and the Department of Mechanical Engineering.
4. To be promoted to graduate status, students must meet all admission requirements of the M.S.M.E. in Mechanical Engineering.
5. Students must earn a minimum of a "B" (3.00) in all shared graduate courses. Failure to earn at least a "B" in a shared graduate course will result in academic review by the graduate program. Failure to maintain good standing as a graduate student will result in academic probation, according to the procedures of the USF Office of Graduate Studies.
6. A comprehensive plan of study to complete the Accelerated B.S.M.E. in Mechanical Engineering/M.S.M.E. in Mechanical Engineering program will be developed with the guidance of an advisor and a faculty member.

Shared Courses (6 credit hours)

The following courses will satisfy six (6) credit hours of Mechanical Engineering elective coursework:

EML 6653 Applied Elasticity
EML 6713 Advanced Fluid Mechanics

Undergraduate Degree Requirements for the B.S.M.E. in Mechanical Engineering (107 credit hours)
***Please see Undergraduate Catalog for major-specific requirements**

Major Core (95 credit hours)

Math and Science (27 credit hours)

MAC 2281 Engineering Calculus I or MAC 2311 Calculus I
MAC 2282 Engineering Calculus II or MAC 2312 Calculus II
MAC 2283 Engineering Calculus III or MAC 2313 Calculus III
MAP 2302 Differential Equations
CHS 2440 General Chemistry for Engineers or CHM 2045 General Chemistry I
CHS 2440L General Chemistry for Engineers Laboratory or CHM 2045 General Chemistry I Laboratory
PHY 2048 General Physics I

PHY 2048L General Physics I Laboratory
PHY 2049 General Physics II
PHY 2049L General Physics II Laboratory

Basic Engineering (22 credit hours)

EGN 3000 Foundations of Engineering
EGN 3000L Foundations of Engineering Laboratory
EGN 3311 Statics
EGN 3321 Dynamics
EGN 3615 Engineering Economics with Social and Global Implications
EGN 3365 Materials Engineering I
EGN 3373 Introduction to Electrical Systems I
EGN 3343 Thermodynamics I
EGN 3443 Probability & Statistics for Engineers

Specialization (43 credit hours)

EML 3035 Programming Concepts for Mechanical Engineers
EML 3500 Mechanics of Solids
EML 3022 Computer Aided Design and Engineering (CAD)
EML 3041 Computational Methods
EML 3262 Kinematics and Dynamics of Machinery
EML 3701 Fluid Systems
EML 4325 Mechanical Manufacturing Processes
EML 3303 Mechanical Engineering Lab I
EML 4123 Heat Transfer
EML 4501 Machine Design
EML 4106C Thermal Systems and Economics
EML 4220 Vibrations
EML 4302 Mechanical Engineering Laboratory II
EML 4312 Mechanical Controls
EML 4551 Capstone Design (CPST)

Technical Writing (3 credit hours)

ENC 3246 Communication for Engineers (WRIN)

Major Electives (12 credit hours)

12 hours of Upper-Level Departmental Electives (Technical Design Elective) from the list below:

BME 4332 Cell and Tissue Engineering
BME 4440 Introduction to Bioastronautics
EAS 4121 Hydro and Aerodynamics
EGN 4366 Materials Engineering II
EML 4141 Thermal Management of Electronic Systems
EML 4230 Introduction to Composite Materials
EML 4246 Tribology
EML 4310 Microcontrollers
EML 4326 Advanced Materials Processing
EML 4414 Power Plant Engineering
EML 4419 Propulsion I
EML 4421 Internal Combustion Engines
EML 4450 Alternative & Renewable Energy
EML 4503 Sustainable Design and Materials
EML 4552 Senior Mechanical Design
EML 4575 Principles of Fracture Mechanics
EML 4593 Haptics
EML 4601 Air Conditioning Design
EML 4702 Fluid Dynamics II
EML 4703 Mechanics of Compressible Fluids
EML 4905 Independent Study
EML 4930 Special Topics in Mechanical Engineering
OSE 4601 Optical Product Technology

Shared Courses (6 credit hours)

The following courses will satisfy six (6) credit hours of Mechanical Engineering elective coursework:

EML 6653 Applied Elasticity

EML 6713 Advanced Fluid Mechanics

Graduate Degree Requirements for the M.S.M.E. in Mechanical Engineering (30 Credit Hours)
***Please see Graduate Catalog for major-specific requirements**

Major Core (12 credit hours)

Students take one course in each of the following three (3) categories:

Fluid and Thermal Science
- EML 6105 Advanced Thermodynamics and Statistical Mechanics
- EML 6154 Advanced Conduction Analysis
- EML 6713 Advanced Fluid Mechanics
- EML 6930 Convection Heat Transfer

Mechanics, Manufacturing, and Materials
- EML 6290 Micro and Nano Manufacturing
- EML 6570 Fracture Mechanics
- EML 6653 Applied Elasticity
- EML 6930 Advanced Manufacturing
- EML 6930 Advanced Materials

Dynamical Systems and Controls
- EML 6273 Advanced Dynamics of Machinery
- EML 6801 Robotic Systems
- EML 6930 Advanced Controls
- EML 6930 Advanced Vibrations

Students must take one of the following courses:
- EML 6931 Advanced Mathematics
- EML 6930 Advanced Mathematics II

Major Electives (12 credit hours)

In addition to these 12 credit hours, the MSME degree requires a minimum of 12 credit hours of approved coursework and a minimum of 6 thesis hours for a total of 30 semester hours. MSME students must present a typed final draft to the Supervisory Committee and Graduate Advisor one week before the final oral examination.

Thesis (6 credit hours)

EML 6971 Thesis: Master's

Comprehensive Exam

A student must pass the final Oral Comprehensive Examination after the student has presented his/her thesis to the Supervisory Committee.