College of Engineering  
Department of Biomedical Engineering and Mechanics  
Minor in Engineering Science and Mechanics  
For Students Graduating in Calendar Year 2017

To obtain a minor in ESM a student must complete 21 credit hours of ESM courses as indicated below.

Amanda Stanley (Room 225 Norris Hall) has been appointed to advise all students studying for a minor in ESM. In accordance with University policy and regulations, she will perform all functions appropriate to an advisor for students studying for a minor.

1. Complete 21 hours of ESM coursework on a A/F basis. A GPA of 2.0 is required in the ESM courses.

2. Complete the following courses:

   - ESM 2104  States
   - ESM 2204  Mechanics of Deformable Bodies
   - ESM 3304  Dynamics
   - ESM 3034  Mechanical Behavior of Materials

3. Complete one of the following (Fluid Mechanics requirement):

   - ESM 3234  Fluid Mechanics I-Control Volumes
   - or
   - ESM 3024  Introduction to Fluid Mechanics
   - or
   - MIE 3404†  Fluid Mechanics
   - or
   - CEE 3304†  Fluid Mechanics for CEE
   - or
   - AOE 3104†  Aircraft Performance
   - and
   - AOE 3014†  Aero/Hydrodynamics
   - or
   - AOE 3204†  Ship Hydrodynamics
   - and
   - AOE 3014†  Aero/Hydrodynamics

4. Complete six hours from the following list. At least 3 hours must be 4000 or above:

   - ESM 3034  Fluid Mechanics Laboratory
   - ESM 3064  Mechanical Behavior of Materials Lab
   - ESM 3124  Dynamics II-Analytical & 3D Motion
   - ESM 3134  Dynamics III-Vibration and Control
   - ESM 3154  Solid Mechanics
   - ESM 3334  Fluid Mechanics II-Differential Analysis
   - ESM 3444  Mechanics Laboratory
   - ESM 4014  Applied Fluid Mechanics
   - ESM 4024  Advanced Mechanical Behavior of Materials
   - ESM 4044  Mechanics of Composite Materials
   - ESM 4084/AOE 4084  Engineering Design Optimization
   - ESM 4105  Engineering Analysis of Physiologic Systems
   - ESM 4106  Engineering Analysis of Physiologic Systems
   - ESM 4114  Nonlinear Dynamics and Chaos
   - ESM 4204  Musculoskeletal Biomechanics and Biologic Control
   - ESM 4224  Biodynamics & Control
   - ESM 4234  Mechanics of Biological Materials and Structures
   - ESM 4245  Mechanics of Animal Locomotion
   - ESM 4246  Mechanics of Animal Locomotion
   - ESM 4334  Hemodynamics
   - ESM 4734/AOE 4024  Introduction to Finite Elements
   - ESM 5405 or 5406  Clinical Internship in Biomedical Engineering

5. Students completing the minor must obey all prerequisite rules. Some courses above may have additional prerequisites not required for the minor.

† Students taking a non-ESM course for this minor requirement must take an additional 3 credit hours of ESM coursework from #4

Freshman 2013-14  11/6/2014