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

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

2. Complete the following courses:

   ESM 2104 or ESM 2114 Statics PRE: MATH 2204 or MATH 2208 or Statics and Structures Course: MATH 2204 or MATH 2208 (3)

   ESM 2204 Mechanics of Deformable Bodies PRE: ESM 2104 or 2114, MATH 2204 (3)

   ESM 2304 Dynamics PRE: ESM 2104 or 2114, MATH 2204, MATH 2214 (3)

   ESM 3054 Mechanical Behavior of Materials PRE: ESM 2204, MSE 2004 OR MSE 2044 OR MSE 3004 OR MSE 3044 (3)

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

   ESM 3234 Fluid Mechanics I Control Volumes PRE: ESM 2204 PHYS 2206 (3)

   or

   ESM 3024 Introduction to Fluid Mechanics PRE: ESM 2104 MATH 2204 (3)

   or

   ME 3404 Fluid Mechanics PRE: ME 2134, MATH 2214 (3)

   or

   CEE 3304 Fluid Mechanics for CEE PRE: ESM 2104 (3)

   or

   AOE 3104 Aircraft Performance PRE: AOE 2104 OR AOE 2204, ESM 2104, AOE 2074 CO: ESM 2504 (3)

   and

   AOE 3014 Naval Architecture PRE: AOE 3184 OR AOE 3284, ESM 2504 (3)

   or

   AOE 3204 Ship Hydrodynamics PRE: ESM 2104, MATH 2214, AOE 2154 OR AOE 2204, AOE 2074 CO: ESM 2504 (3)

   and

   AOE 3014 Aero Hydrodynamics PRE: AOE 3184 OR AOE 3284, ESM 2504 (3)

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

   ESM 3034 Fluid Mechanics Laboratory PRE: ESM 2504, ECE 3354 CO: ESM 3234 (1)

   ESM 3064 Mechanical Behavior of Materials Lab PRE: ESM 2204 CO: ESM 3054 (1)

   ESM 3124 Dynamics II Analytical & 3D Motion PRE: ESM 2204, MATH 2214, MATH 2304 (3)

   ESM 3134 Dynamics III Vibration and Control PRE: ESM 3124, MATH 2304 (3)

   ESM 3154 Solid Mechanics PRE: ESM 2204, MATH 2214 CO: MATH 2304 (3)

   ESM 3334 Fluid Mechanics II Differential Analysis PRE: ESM 3234 CO: MATH 2304 (3)

   ESM 3444 Mechanics Laboratory PRE: ESM 3234, ESM 3054, ESM 3064, ESM 3084, ESM 3114, ECE 3354 CO: ESM 3134, ESM 3354, ESM 3354 (3)

   ESM 4014 Applied Fluid Mechanics (3)

   ESM 4024 Advanced Mechanical Behavior of Materials PRE: ESM MISE 3054 (1)

   ESM 4044 Mechanics of Composite Materials PRE: ESM 2204 (3)

   ESM 4084/AOE 4084 Engineering Design Optimization PRE: MATH 2204 (3)

   ESM 4105 Engineering Analysis of Physiologic Systems (3)

   ESM 4106 Engineering Analysis of Physiologic Systems (3)

   ESM 4114 Nonlinear Dynamics and Chaos PRE: ESM 2204 or PHYS 2204, MATH 2214 (3)

   ESM 4194 Sustainable Energy Solutions (3)

   ESM 4204 Musculoskeletal Biomechanics and Biologic Control (3)

   ESM 4224 Biodynamics & Control (3)

   ESM 4234 Mechanics of Biological Materials and Structures (3)

   ESM 4245 Mechanics of Animal Locomotion PRE: ESM 3054 (3)

   ESM 4246 Mechanics of Animal Locomotion PRE: ESM 3234 (3)

   ESM 4304 Hemodynamics (3)

   ESM 4614 Probability Based Modeling, Analysis, and Assessment PRE: ESM 2204 (3)

   ESM 4734/AOE 4024 Introduction to Finite Elements (3)

   ESM 5405 or 5406 Clinical Internship in Biomedical Engineering (3)

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

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