### Freshman Year

**Fall Semester**
- CHEM 1035 General Chemistry 3
- CHEM 1045 General Chemistry Lab. 1
- ENGE 1024 Engineering Exploration † 2
- ENGL 1105 Freshmen English 3
- MATH 1205 Calculus 3
- ENGE 1114 Exploration of Engineering Design † 2
- MATH 1114 Linear Algebra 2
- Area 2/3 Liberal Education* 3
- TOTAL HOURS 17

**Spring Semester**
- CHEM 1045 General Chemistry Lab. 1
- ENGL 1106 Freshman English 3
- MATH 1206 Calculus 3
- MATH 1224 Vector Geometry 2
- PHYS 2305 Foundations of Physics I and Lab 4
- Area 2/3 & 7 Liberal Education* 3
- TOTAL HOURS 17

### Sophomore Year

**Fall Semester**
- ESM 2014 Prof. Development Seminar 1
- ESM 2104 Statics 3
- ISE 2014 Engineering Economy 2
- MATH 2224 Multivariable Calculus 3
- PHYS 2306 Foundations of Physics I and Lab 4
- Area 2/3 Liberal Education* 3
- Area 6 Liberal Education 1
- TOTAL HOURS 17

**Spring Semester**
- ESM 2074 Computational Methods or
  CS 3414 Numerical Methods § 3
- ESM 2204 Mechanics of Deformable Bodies 3
- ESM 2304 Dynamics 3
- MATH 2214 Intro. Diff. Equations 3
- MSE 2034 Elements Materials Engr. 3
- Area 2/3 Liberal Education* 3
- TOTAL HOURS 18

### Junior Year

**Fall Semester**
- ESM 3015 Fluid Mechanics I £ 3
- ESM 3054 Mechanical Behavior of Materials 2
- ESM 3064 Mech. Behavior of Matls. Lab 1
- ECE 3054 Electrical Theory 3
- PHYS 3324 Modern Physics 4
- MATH 4574 Vector & Complex Analysis 3
- TOTAL HOURS 16

**Spring Semester**
- ESM 3016 Fluid Mechanics II 3
- ESM 3034 Fluid Mechanics Laboratory £ 1
- ESM 3124 Intermediate Dynamics 3
- ESM 3154 Solid Mechanics or
- PHYS 3704 Thermal Physics 3
- PHYS 3324 Modern Physics 4
- MATH 4564 Operational Methods 3
- TOTAL HOURS 17

### Senior Year

**Fall Semester**
- ESM 4015 Creative Design & Proj. I 3
- ESM 4074 Vibration and Control 3
- ESM 4014 Applied Fluid Mechanics or
  ESM 4304 Hemodynamics** 3
- STAT 4604 Statistical Methods for Engineers 3
- PHYS 3405 Intermediate Elec. & Mag. 3
- TOTAL HOURS 15

**Spring Semester**
- ESM 4016 Creative Design & Proj. II £ 3
- ESM 4734 Intro Finite Elements 3
- PHYS 4455 Intro Quantum Mechanics 3
- ESM 4004 Inst. & Exp. Mechanics 3
- Technical Elective 3
- TOTAL HOURS 15

† ENGE 1434 (5 cr.) may be substituted for ENGE 1024 and ENGE 1114.
* A total of 6 hours of Area 2 and 6 hours of Area 3 courses must be completed. Only selected courses can simultaneously satisfy both Area 2/3 & 7 requirements. Use extra care when selecting this course.
** This is an alternate course not typically offered during the indicated semester. Use extra care when planning.
£ Fulfills Visual Expression, Writing, and Speaking requirement
Foreign Language Requirement: Students who did not complete 2 units of foreign language in high school must earn 6 credit hours of a college level foreign language, such credits to be in addition to those normally required for graduation.

**Eligibility for continued enrollment:** Upon having completed 72 hours (including transfer, advanced placement, advanced standing, and credit by examination), "satisfactory progress" toward a B.S. degree will include the following minimum criteria: (1) all courses in the freshman year, including a minimum grade of C- or better in ENGE 1024 and ENGE 1114 or in ENGE 1434; (2) credit for MATH 2214, 2224; ESM 2014, 2104, 2204, 2304, 2074; and PHYS 2305, 2306; and (3) a 2.5 GPA.

§ Statement on Hidden Prerequisites: There is one hidden programming course prerequisite for the alternate course CS 3414 Numerical Methods. There are no hidden prerequisites for any other required course on this checksheets.
An in major (all ESM classes) and overall GPA of 2.0 is required for graduation.
A TOTAL OF 132 SEMESTER HOURS ARE REQUIRED FOR GRADUATION.
### Approved Technical Electives:

- ESM 4024: Advanced Mechanical Behavior of Materials
- ESM 4044: Mechanics of Composite Materials
- ESM 4084: Engineering Design Optimization
- ESM 4105-4106: Engineering Analysis of Physiologic Systems
- ESM 4114: Nonlinear Dynamics and Chaos
- ESM 4154: Nondestructive Evaluation of Materials
- ESM 4184: Design and Optimization of Composite Structures
- ESM 4194: Sustainable Energy Solutions for a Global Society
- ESM 4204: Musculoskeletal Biomechanics
- ESM 4224: Biodynamics & Control
- ESM 4444: Stability of Structures
- ESM 4524: Introduction to Wave Motion
- ESM 4574: Biomaterials
- ESM 4614: Introduction to Reliability-Based Engineering Design
- ESM 4984: Special Study
- ESM 4994: Undergraduate Research
- ESM 5405 or 5406: Clinical Internship in Biomedical Engineering
- AOE 3024: Thin-Walled Structures
- AOE 3124: Aerospace Structures
- AOE 3224: Ocean Structures
- AOE 3314: Stability and Control
- AOE 4134: Astromechanics
- AOE 4144: Aircraft Automatic Flight Control
- AOE 4214: Ocean Wave Mechanics
- CEE 3404: Theory of Structures
- CEE 3414: Design of Wood Structures
- CEE 3424: Reinforced Concrete Structures I
- CEE 3434: Design of Steel Structures I
- ECE 3105-3106: Electromagnetic Fields
- ECE 4405-4406: Control Systems
- ENGR 3124: Introduction to Green Engineering
- ENGR 3134: Environmental Life Cycle Analysis
- ME 3134: Thermodynamics
- ME 3304: Heat and Mass Transfer
- ME 4234: Aerospace Propulsion Systems
- ME 4242: Aircraft Engines and Gas Turbines
- ME 4504: Dynamic Systems Controls Engineering I
- ME 4514: Controls Engineering II
- ME 4524: Introduction to Robotics and Automation
- MSE 4055: Materials Selection and Design I
- MSE 4164: Corrosion
- MSE 4304: Metals and Alloys
- CHEM 2535-2536: Organic Chemistry
- CHEM 2545-2546: Organic Chemistry Laboratory
- CHEM 4654: Adhesive and Sealant Science
- MATH 3214: Calculus of Several Variables
- MATH 4164: Advanced Discrete Mathematics
- MATH 4234: Elementary Complex Analysis
- MATH 4445-4446: Intro. Numerical Analysis
- PHYS 3405-3406: Intermediate Electricity and Magnetism
- PHYS 4455-4456: Introduction to Quantum Mechanics
- PHYS 4504: Introduction to Nuclear and Particle Physics
- PHYS 4714: Introduction to Biophysics