

ABET Course Syllabus for ETSC 311: Statics

1. Course number and name: ETSC 311: Statics
2. Credits and contact hours: 4 credit hours, 4 hours per week
3. Instructor's Name: Dr. Darren Olson
4. Textbook, title, author, and year:
 - *Mastering Statics and Mechanics of Materials*, 5th ed., by R. C. Hibbeler, Pearson Prentice-Hall Publishing.
- a. Other supplemental materials:
 - Scientific calculator such as the TI30X or TI36X, or one with similar capabilities
5. Specific course information:
 - a. Brief description of the content of the course (catalog description): Introductory statics including forces and equilibrium. Principles of structures including trusses, beams, frames, machines and friction. This course consists of four hours of lecture each week. Formerly IET 311, students may not receive credit for both. Course will be offered every year (Fall, Winter).
 - b. Pre-requisites: PHYS 111 or PHYS 181. Pre or Co-requisite: MATH 173.
 - c. Required, elective, or selected elective (as per Table 5-1) course in the program: Required
6. Specific goals for the course:

Introductory statics including forces and equilibrium. Principles of structures including trusses, beams, frames, machines, and friction.

 - a. Specific outcomes of instruction:
 - Students will understand the relationships between metric and US units and have the ability to work in both arenas. A foundation for problem solving techniques is developed and students will be able to apply analytical skills in engineering statics, the study of forces on objects at rest.
 - Demonstrate an understanding of vectors and be able to express and resolve vectors in two and three dimensions.
 - Draw a free body diagram and solve for unknown forces in two and three dimensions for particle and rigid body systems. Demonstrate analytical skills by solving for unknown forces.
 - Students will be able to perform vector operations of dot and cross product and use these principals to solve for unknown forces in three dimensions. Demonstrate the ability to use the concepts of moments and couples in qualitative and quantitative applications.
 - Apply the method of joints and sections to determine the forces in a truss's members. Obtain the ability to determine joint reactions of simple frames or machines.

- Students will understand the concept of friction and analyze rigid bodies subjected to dry friction.
- Understand the concepts of center of gravity, center of mass, and the centroid. Be able to calculate the center of gravity and centroid of shapes.
- Be able to conceptualize fluid pressure and calculate hydrostatic forces.

b. Criterion 3 student outcomes addressed by course:
3 (1)

7. Brief list of topics covered:

- Scalars & Vectors
- Principle of Moments
- Distributed Loading
- Equations of Equilibrium
- Dry Friction
- Method of Sections
- Frames & Machines
- Center of Gravity
- Moments of Inertia