Bergen Community College
Division of Math, Science and Technology
Department of Physical Sciences

Master Course Syllabus
PHY-294 Engineering Mechanics - Statics

Semester and year:
Course and Section Number:
Meeting Times and Locations:

Instructor:
Office Location:
Phone:
Office Hours:
Email Address:

**Course Title and Number:** Engineering Mechanics - Statics, PHY-294
**Pre-requisites:** Calculus II (MAT-281) with grade of “C” or better or permission of the Physical Science Department Chair; Physics I (PHY-280) with grade of "C" or better
**Course Credits:** 4
**Course Hours:** 4 lecture hours

**Course Description:** Engineering Mechanics - Statics is a study of the state of rest of bodies under the action of forces. This course builds a foundation of analytic capability for the solution of a great variety of engineering problems. Topics covered include the statics of particles and rigid bodies.

**Student Learning Outcomes/Behavioral Objectives**
The student, drawing upon knowledge and skills previously acquired in the prerequisite courses, will begin to synthesize that important material. The student will also demonstrate the following skills:

1. Precise planning of the solution to a physical problem by paying strict attention to the very finest of details.
2. Precise use of coordinate systems advantageously in any given problem.
3. Precise use of mathematical symbols, diagrams, graphs, and sketches.
4. Precise use of the laws of statics with appropriate mathematics using precise diagrams and critical thinking.

**Means of Assessment**
The Student Learning Objectives (SLOs) in this course are aligned with the Learning Goals of both the Engineering Program and the Physics Program. In addition, student progress in reaching the course's SLOs is assessed through a variety of assessment types (tools) and on the basis of a variety of assessment criteria. The means of assessment utilized in this course are in-class exams, hand-written homework problems and extensive use of the online MasteringEngineering tutorials and associated online homework problems. In addition the instructor may issue quizzes. The instructor may also require a course project (individual or group) with a final demonstration and/or oral presentation and/or written report.

**Special Features of the Course**
This course requires the use of learning technologies and technological literacy. The required MasteringEngineering tutorials make use of adaptive learning and active learning. The required MasteringEngineering homework assignments are designed to encourage critical thinking. The course also requires the use of Excel or other spreadsheet software for additional in-depth analysis of some instructor-chosen homework problems. Free-ware open software may also be used for truss analysis and other problems at the prerogative of the instructor.
Course Texts and/or Other Study Materials

Textbook (required) - Options:


Homework Website (required):
MasteringEngineering, www.masteringengineering.com
Course ID: ###########

Materials and Supplies (required):
In addition to the required text and access to MasteringEngineering as indicated above, a simple pocket-sized non-programmable scientific calculator is required for exam purposes, soft #2 pencils, a see through 12 inch ruler and graph paper. Smart phones are not permitted to be substituted for calculators. Also, access is needed to a laptop or desktop computer with spreadsheet/plotting software such as Excel installed and possibly the latest edition of the free-ware open software GNU Octave (MATLAB compatible) installed and/or other chosen software per the instructor's prerogative.

Supplemental Notes:
The instructor may provide additional notes on topics outside the contents of the course text including, but not limited to notes on the topics of Stress, Strain and Elasticity as well as matrix solutions to truss and other problems. Additional tutorials on the use of Excel and GNU Octave (MATLAB compatible) and/or other chosen software may be provided.

Bibliography and Supporting Materials:

Course Contents:
1. General Principles
2. Force Vectors
3. Equilibrium of a Particle
4. Force System Resultants
5. Equilibrium of a Rigid Body
6. Structural Analysis (with supplemental notes)
7. Internal Forces
8. Friction
9. Center of Gravity and Centroid
10. Virtual Work

Research, Writing, and/or Examination Requirement(s)
The instructor may require a course project (individual or group) with a final demonstration and/or oral presentation and/or written report.

Grading Policy
The general grading for the course is weighted according to the following scheme:

1. Three or more non-cumulative (modular) exams and possibly quizzes.......................... 30%
2. Homework, tutorial completion, project ................................................................. 35%
2. Final Exam (Cumulative)....................................................................................... 35%
There are no make-ups issued for missed exams.
An instructor may issue penalties for late assignments, and the instructor will provide that policy.
An instructor may modify this general Grading Policy, and the instructor will provide that policy.

**Attendance Policy**
All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor for each section of each course. These will be established in writing on the individual course outline. Attendance will be kept by the instructor for administrative and counseling purposes.

**Other College, Divisional, and/or Departmental Policy Statements**

**Cheating and Plagiarism:** This course follows the definition and consequences of cheating and plagiarism as described in the Bergen Community College Catalog under ACADEMIC REGULATIONS.

**Student and Faculty Support Services**

**Services for Students with Disabilities:**
Bergen Community College aims to create inclusive learning environments where all students have maximum opportunities for success. Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Office of Specialized Services at 201-612-5269 or via email at ossinfo@bergen.edu for assistance.

**Course Outline and Calendar**

Note: Instructor will decide on which homework problems shall be assigned, including which of these must be hand-written and which must be online.

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