## MAE 241 - Statics

**Fall 2018 Course Syllabus**

Credits: 3 Hr

Prerequisite: MATH 155 and Physics 111, both with grades of C- at least

Textbook: *R. C. Hibbeler*, Engineering Mechanics: Statics, 14th Edition, Pearson Prentice Hall, New Jersey USA, 2016, ISBN 978- 0134209296

**Instructors**

**Course Coordinator**: Dr. Greg Thompson, Office: 733 ESB, (304) 293-3254, E-mail: Gregory.Thompson@mail.wvu.edu, Office Hours: MF 11:00 - 11:50 am, W 3:00-3:50 pm

**Section 001 (CRN: 81446), TR 8:00 – 9:15, G102 ESB**; **Dr. Kostas Sierros,** 729 ESB, (304) 293-3420, Email: Kostas.Sierros@mail.wvu.edu, Office Hours: TR 11:00 am – noon

**Section 002 (CRN: 81865), MWF 1:00 – 1:50, G102 ESB;** **Dr. Edward Sabolsky,** 743 ESB,

(304) 293-3272, Email: Ed.Sabolsky@mail.wvu.edu, Office Hours: MW 8:00 - 10:00 am

**Section 003 (CRN: 80886), MWF 4:00 – 4:50, G102 ESB;** **Dr. Greg Thompson,** 733 ESB, (304) 293-3254, E-mail: Gregory.Thompson@mail.wvu.edu, MF 11:00 - 11:50 am, W 3:00-3:50 pm

**Section 007 (CRN: 84506), MWF 8:00 – 8:50, G102 ESB;** **Dr. Bruce Kang,** 739 ESB

 (304) 293-3232, E-mail: Bruce.Kang@mail.wvu.edu, Office Hours: MTW 11:30 am - 12:30 pm

**Section 7D1 (CRN: 89121), MWF 4:00 – 4:50, Online;** **Dr. Edward Sabolsky,** 743 ESB, (304) 293-3272, Email: Ed.Sabolsky@mail.wvu.edu, Office Hours: MW 8:00 - 10:00 am

**Educational Objectives**

1. Critical Skills. Students must demonstrate **mastery** of the following skills/knowledge to receive a passing grade in this course:
* Ability to draw complete and correctly-labeled Free Body Diagrams of rigid bodies or systems of rigid bodies in static equilibrium;
* Ability to compute the resultant of any number of concurrent forces in 2- or 3- dimensions;
* Ability to compute the dot product and cross product of two vectors, and demonstrate understanding of the meaning of the results;
* Ability to solve particle equilibrium problems in 2- or 3- dimensions;
* Ability to compute the moment generated by a force about any point in 2-D space; and
* Ability to find support reactions for truss and frame/machine problems.
1. Competency Skills. Students are expected to demonstrate some level of competency in the following skills. The semester grade will reflect the student’s level of achievement of these objectives.
* Ability to reduce a system of forces acting on a rigid body to a single equivalent force and compute its point of application;
* Ability to solve rigid body equilibrium problems in 2- or 3-dimensions for statically determinate systems;
* Ability to compute frictional forces for sliding motion and for belts/pulleys. Ability to solve the tip/slip problem;
* Ability to compute the centroid and the area moment of inertia of 2-D bodies using the method of composite areas;
* Ability to construct shear force and bending moment diagrams for systems of concentrated forces and/or distributed loads acting on statically determinate beams;
* Ability to solve for the internal forces acting on any member of a pin-jointed truss structure or a frame/machine component;
* Ability to find the centroid and area moment of inertia for 2-D shapes by the method of integration; and
* Ability to compute the moment about any axis in 3-D space generated by a force or a system of forces.

**Course Grading**

Evaluation of student performance will be done using a combination of absolute and relative scales. This means that part of your grade will be based on your demonstration of mastery of certain skills/knowledge. Those skills are listed as the “critical skills” in the Educational Objectives section above. You will not pass this class without demonstrating complete facility with those skills. The remainder of your grade will be based on your level of mastery of the “competency” skills, and to some extent on your performance relative to your peers. Numerical grades will be assigned for homework assignments (**and or quizzes at the discretion of the individual instructor**), tests, and a common final exam, with final semester grades weighted according to the following scale. **Irrespective of your semester scores, you must obtain a minimum of 50% on the common final** **and a minimum of 60% for the specific critical skill questions on the common final to pass the course (in addition to an overall score of at least 60% in the course).**

1. Homework: 10%
2. Quizzes: 10%
3. 3 Tests: 45%
4. Final Exam: 35% (must score at least 50% to pass the course)

Note: Only non-programmable calculators are allowed for the exams. Any device (such as smart phone, graphing calculator, etc.) capable of wireless data communication is forbidden to use during the exam. This policy will be strictly enforced in exams.

Semester grades will be assigned according to the standard scale:

**A (90 - 100); B (80 - <90); C (70 - <80); D (60 - <70); F: < 60.**

**Class Attendance:**

Attendance is expected. Students cannot reasonably expect to master the course material without regular attendance in class. Students are responsible for all material covered and quizzes taken in class regardless of their attendance.

**Policies**

* Professional and ethical behavior is expected in class and in carrying out assigned tasks and coming to class on time.
* Disruptive behavior such as reading newspapers, talking, using cell phones or other electronic devices is not permitted in class.
* A make-up test shall be given only if the student can show valid reason to miss the test. This has to be established before the regularly scheduled test. A student is limited to one make-up test for the course.

**Homework**

Homework will primarily be done using the Mastering Engineering (ME) software/website. In addition to the assigned homework problems, the ME software makes available special tutorial problems and an effectively unlimited number of practice problems for you to use. Success in engineering courses is greatly enhanced by working enough practice problems to insure that you thoroughly understand all of the concepts. Although the homework is only 10% of your grade, it is actually far more important because if you do not do the homework you stand a low chance of performing well on the quizzes and exams.

**Mastering Engineering (ME):**

Your will need to register for Mastering Engineering by purchasing an access code and then going online to www.masteringengineering.com. You may purchase a code either through the WVU bookstore or online. When you register for ME, you will be asked to enter your access code and to select a course. You will be given a course ID this semester by your section instructor. *(\*note\*: use your MIX User Name as your Student ID for the system*). Your textbook will be Engineering Mechanics, Statics, **14th edition** by Hibbeler. You MUST select the correct text or you may have to hassle with getting a credit for your registration number and then register again, so PAY ATTENTION!! For Fall 2018, MAE 241-003, the Mastering Engineering access code is **XYZABC123**.

**Academic Integrity**

Students are expected to conduct themselves with complete integrity in this and all classes at WVU. In MAE 241 that means the following: you may discuss homework problems and class materials with other students but **consulting or copying the work of another student on an examination is absolutely forbidden.** **Use of cell phones, other electronic devices, or any means that allow communications are strictly prohibited during exams, tests or quizzes administered inside the classroom.** Only **simple, non-programmable calculator is allowed** during such exams, which must be provided by the students. Active measures will be taken to maintain academic integrity. Students caught violating this policy will receive a grade of zero for the assignment as a minimum penalty. Any student caught violating the policy more than once in a semester will receive a grade of *UF* (unforgivable *F*—cannot be expunged from the transcript via D/F repeat).

**ABET Outcome**

This Course satisfies the following ABET Outcome:

1. **An ability to apply knowledge of mathematics, science, and engineering**;

**Important Dates**

August 15, Wednesday First Day of Classes

August 21, Tuesday Last Day to Register, Add New Courses, Make Section Changes, Change Pass/Fail, and Audit

September 3, Monday Labor Day Recess, No Class

October 4, Thursday Mid-semester reports due, noon

October 12, Friday Fall Break, No Class

October 23, Tuesday Last Day to Drop a Class

November 6, Tuesday General Election, No Class

November 19-23 Thanksgiving Recess, No Class

December 5, Wednesday Last Day to do Withdraw from the University

December 6, Thursday Last Day of Classes

December 12, Wednesday Common Final Exam, 5-7 PM, Rooms TBD

**Additional Resources**

Academic Standards - <https://provost.wvu.edu/governance/academic-standards-resources>

Academic Policies - <https://tlcommons.wvu.edu/syllabus-policies-and-statements>

**MAE 241, Fall 2018 - Tentative Schedule**

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