EM 222, WKU Statics

Course Syllabus

School of Engineering and Applied Sciences

Western Kentucky University

Summer 2020

Instructor Information

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Class Information

- Location: Online (Zoom)
- Time: MTWRF, 1:00pm-3:15pm

Prerequisite: Math136 (Calculus I)

Corequisites: Math 137 (Calculus II) and Phy255 (University Physics I)

Required Materials

- **Vector Mechanics for Engineers - Statics, 11th Edition**, 2015, by Beer, Johnston and Mazurek. (ISBN 978-0077687304)
- **MHConnect Access.** This is an online homework system where all non-test assignments will be found.

Course Description

This is the first basic engineering-science course required in the engineering curriculum at Western Kentucky University. The course emphasizes the proper utilization of vector algebra and free body diagrams to solve problems in engineering statics. Vectors are used to describe the action of forces and moments acting on particles (point masses) and rigid bodies, which are fixed in space or undergoing uniform motion. The course begins with a description of how the topic of Statics fits into the broad picture of the engineering curriculum, and more particularly, the area known as Engineering Mechanics.

Course Outcomes:

Students completing this course should have:

- An ability to construct a proper free-body diagram
- An ability to solve an equilibrium problem through the use of Newton's laws
- An ability to solve a static truss problem
- An ability to solve a static friction problem
- An ability to compute the center of mass and moment of inertia for a composite shape

- An awareness of current issues where statics principles are important and an understanding of how engineering solutions to those issues are influenced by (and have an impact on) societal, economic, and environmental factors

Evaluation Methods

The course grade will be evaluated as follows:

Method of Evaluation	% of Final Grade
Homework	15
Two Tests (25% each)	50
Final Exam (Comprehensive)	35

Attendance and Punctuality

Attendance in classes is critical to student success; students should seize the opportunity to share and discuss information in classes. The course is designed to move swiftly and efficiently. If a student is going to miss a class, s/he should inform the instructor before missing the class. To be considered in attendance for a class, students must arrive by the official class starting time and students must remain in class for the entire period.

Late or Missed Assignments

If a student is experiencing difficulty meeting a deadline, he/she is encouraged to contact the course instructor as soon as possible to discuss the situation in advance of the deadline.

Calculators

You will only be allowed to use an NCEES approved calculator on exams, the same calculators used on the FE and PE exams. I suggest you get one now and start practicing. You can find the published list at http://ncees.org/exams/calculator-policy/

Academic Integrity

"The maintenance of academic integrity is of fundamental importance to the Western Kentucky University. Thus, it should be clearly understood that acts of plagiarism or any other form of cheating will not be tolerated and that anyone committing such acts risks punishment of a serious nature."

Plagiarism

"To represent written work taken from another source as one's own is plagiarism. Plagiarism is a serious offense. The academic work of a student must be his/her own. One must give any author credit for source material borrowed from him/her. To lift content directly from a source without giving credit is a flagrant act. To present a borrowed passage without reference to the source after having changed a few words is also plagiarism."

Special Accommodations:

In compliance with university policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Office of "The Student Accessibility Resource Center" (Formerly Student Disability Services) in the first floor of the Downing Student Union, 1074. The phone number is 270 745 5004. Please DO NOT request accommodations directly from the professor or instructor without a letter of accommodation from the Office for Student Disability Services.

Approach for Evaluating Student Understanding

In grading of student work, a focus is maintained on whether there is an understanding the fundamental concepts. This needs to be clearly expressed by the work, with neat and logical flow of problem solution. Demonstrating your understanding of how to apply the equations, and the meaning of the results is considered most important. Keep in mind that a numerically correct answer may not receive full credit if the path to obtaining that answer is not readily apparent.

Covered Topics

The course will tentatively follow the outline in the following table.

Week	Topics (partial description)
1	• Introduction; Newton's laws, Units; Problem Solving (Chap 1) • Statics of Particle; Equilibrium of Particle (Chap 2)
2	• Force System Resultants/Moment Systems (Chap 3) **Exam 1** • Equilibrium of a Rigid Body (Chap 4)
3	• Centroids and Center of Gravity (Chap 5) • Structural Analysis (Chap 6) **Exam 2** • Internal Forces and Moments (Chap 7)
4	• Moment of Inertia (Chapter 9) • Friction (Chapter 8) **Final Exam (*Cumulative*)**

* Content is time-permitting

Discrimination, Harassment, Sexual Misconduct/Assault Policies

Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's Title IX Sexual Misconduct/Assault Policy (#0.2070) at https://wku.edu/eoo/documents/titleix/wkutitleixpolicyandgrievanceprocedure.pdf and

Discrimination and Harassment Policy (#0.2040) at https://wku.edu/policies/hr_policies/2040_discrimination_harassment_policy.pdf.
Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Andrea Anderson, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121.
Please note that while you may report an incident of sex/gender based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are "Responsible Employees" of the University and **MUST** report what you share to WKU's Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU's Counseling and Testing Center at 270-745-3159.