CE 214 Statics

Spring 2017

Instructor: Katerina E. Aifantis
Lecture class: TTh 9:30 am-10:45 am
Office hours: TTh 10:50-12:15
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Textbook: Engineering Mechanics: Statics
by R.C. Hibbeler, 13th Edition, Pearson. (ISBN 978-0-13-291554-0).

Calculators allowed in class

Casio: All fx-115 models. Any Casio calculator must contain fx-115 in its model name. Examples of acceptable Casio fx-115 models include but are not limited to the following:
fx-115 MS, fx-115 MS Plus, fx-115 MS SR, fx-115 ES, fx-115 ES Plus.
Hewlett Packard: The HP 33s and HP 35s models, but no others.
Texas Instruments: All TI-30X and TI-36X models. Any Texas Instruments calculator must contain either TI-30X or TI-36X in its model name. Examples of acceptable TI-30X and TI-36X models include but are not limited to the following: TI-30Xa, TI-30Xa SOLAR, TI-30Xa SE, TI-30XS Multiview, TI-30X IIB, TI-30X IIS TI-36X II, TI-36X SOLAR, TI-36X Pro.

LEARNING GOALS

In this course, we will use fundamental laws (such as Newton's laws) and concepts to determine the actions of forces on rigid bodies. The important goals to be achieved are:
1. An understanding of the principles of mechanics
2. Application of these principles to analyze physical systems
3. Develop problem-solving skills

Evaluation

3 Exams @ 20% each	60%
Final Exam	23%
Homework	12%
Participation & attendance (lecture & discussion & pop quizzes)	5%

Semester grades will be determined as follows:

90-100% = A; 80-89% = B; 70-79% = C; 60-69% = D; 0-59% = F.

Examinations

You must take three examinations during the semester and a final examination. All examinations will be held during the regular class session in the lecture room assigned to this course. All examinations are closed book, but you are allowed a one-page note sheet (8.5"x11" both sides) with basic equations, but no solved problems. Calculators without wireless access are permitted on all exams.

Only one excused missed examination is allowed. A makeup will be given. An unexcused missed examination is scored as zero.

Penalties are assessed for:
(I) algebra and arithmetic errors;
(II) answers presented without proper units, sign or direction;
(III) incomplete free body diagrams; and
(IV) messy or illegible presentation.

The student must notify the instructor of any omission or error before the date of the final examination. No changes will be accepted after the final examination.

Homework policy
Homework is due at the beginning of class on the due date. The homework schedule is tentatively shown within the course outline. However, since the course schedule for each topic is dependent on class progress, the due date for each homework assignment is subject to change. Any homework changes will be posted on the D2L class website. Students are responsible for checking D2L and university email on a regular basis.

Attendance
Students are expected to attend all lecture and discussion classes, as well as utilize office hours as needed. The instructor, at his discretion, may decide to consider late arrivals or early departures as full absences. A two week absence may result in administrative withdrawal. If you need to be absent from the class for justifiable reasons (sickness, family obligations, etc.), you must inform the instructor in advance or immediately after the day of absence. If a student misses a class, he/she is responsible for all announcements and subjects covered in that class. If in doubt, contact the instructor.

Pop Quizzes
A way to monitor attendance will be short pop-quizzes. The grade from the pop-quiz will account for only 2.5% of your grade and is basically to monitor your understanding in class and also your attendance.

ADA compliance
The University of Arizona strives to comply with the provisions of the Americans with Disabilities Act and Section 504 of the Rehabilitation Act. Students with disabilities must notify the instructor at the beginning of the semester and must contact the Disability Resource Center.

Academic Integrity
Principle Integrity and ethical behavior are expected of every student in all academic work. This Academic Integrity principle stands for honesty in all class work, and ethical conduct in all labs and clinical assignments. This principle is furthered by the student Code of Conduct and disciplinary procedures established by ABOR Policies 5-308 through 5-404, all provisions of which apply to all University of Arizona students.
This Code of Academic Integrity (hereinafter "this Code") is intended to fulfill the requirement imposed by ABOR Policy 5-403.A.4 and otherwise to supplement the Student Code of Conduct as permitted by ABOR Policy 5-308.C.1.
Failure to follow this code of academic integrity will result in failing the course and be reported to the Dean of Students' office.

Prohibited Conduct

Conduct prohibited by this Code consists of all forms of academic dishonesty, including, but not limited to:

1 Cheating, fabrication, facilitating academic dishonesty, and plagiarism as set out and defined in the Student Code of Conduct, ABOR Policy 5-308-E.6, E.10, and F.1

3 Violating required professional ethics rules contained or referenced in the student handbooks (hardcopy or online) of undergraduate or graduate programs, or professional colleges.

4 Violating health, safety or ethical requirements to gain any unfair advantage in lab(s) or clinical assignments.

5 Failing to observe rules of academic integrity established by a faculty member for a particular course.

6 Attempting to commit an act prohibited by this Code. Any attempt to commit an act prohibited by these rules shall be subject to sanctions to the same extent as completed acts.

Tentative schedule for CE 214, Spring 2017
(The instructor may change this schedule to accommodate class needs.)

Week	Topics	Book Sections
1	**Class overview** (syllabus) **Ch.1 General principles** (Mechanics, Fundamental concepts, Units of measurement, The International System of Units, Numerical calculations, General procedure for analysis) **Ch. 2 Force vectors** (Scalars and vectors, Vector operations, Vector addition of forces)	1.1-1.6 2.1-2.3
2	**Ch. 2 Force vectors** (Addition of a system of coplanar forces, Cartesian vectors, Addition of Cartesian vectors, Position vectors, Force vector directed along a line, Dot product)	2.4-2.9
3	**Ch. 3 Equilibrium of a particle** (Condition for the Equilibrium of a Particle, The Free-Body Diagram, Coplanar force systems, Three dimensional force systems)	3.1-3.4
4	**Ch. 4 Force System Resultants** (Moment of a force using scalar formulation, Cross product, Moment of a force using vector formulation) (Principle of moments, Moment of a Force about a specified axis, Moment of a couple, Simplification of a force and couple system, Reduction of a simple distributed loading)	4.1-4.3 4.4-4.9
5	**Review for Exam 1** **EXAM 1 on Feb 09 2017**	
6	**Ch. 5 Equilibrium of a Rigid Body** (Conditions for rigid-body equilibrium, Free-Body Diagrams, 2D Equations of equilibrium, Two- and three-force members, Free-Body Diagrams)	5.1-5.5
7	**Ch. 5 Equilibrium of a Rigid Body** (3D Equations of equilibrium, Constraints of statical determinacy) **Ch. 6 Structural Analysis** (Simple trusses, The Method of joints, Zero-force members)	6.1-6.3
8	**Ch. 6 Structural Analysis** (The Method of sections, Space trusses, Frames, and machines)	6.4-6.6
9	**Ch. 6 Structural Analysis** (The Method of sections, Space trusses, Frames, and machines) **Ch. 7 Internal Forces** (Internal loadings developed in structural members, Shear and moment equations and diagrams, Relations between distributed load, shear, and moment, Cables)	6.6 7.1-7.4
10	**Spring Break**	
11	**Review** **Exam 2 on October Mar 23**	
12	**Chapter 8 Friction** (Characteristics of dry friction, Problems involving dry friction, Wedges, Frictional forces on screws, Frictional forces on flat belts)	8.1-8.5

Tentative schedule for CE 214, Fall2014
(The instructor may change this schedule to accommodate class needs.)

13	**Chapter 9 Center of Gravity and Centroid** (Center of gravity, center of mass, and the centroid of a body, Composite bodies, Theorems of Pappus and Guldinus, Resultant of a general distributed loading)	9.1-9.4
14	**Chapter 9 Center of Gravity and Centroid** (Resultant of a general distributed loading) **Ch. 10 Moments of Inertia** (Parallel-axis theorem for an area, Moments of inertia for composite areas, Mass moment of inertia)	9.1-9.4 10.1-10.2, 10.4, 10.8
15	**Ch. 10 Moments of Inertia** (Parallel-axis theorem for an area, Moments of inertia for composite areas, Mass moment of inertia) **Review for exam 3**	
16	**Exam 3 April 24** **Review For Final**	
17	Final review	