

CIE200- STATICS

(Fall 2016)

<u>Course Description</u>	Review of vector algebra, forces, moments and couples, as well as free body diagram, equations of equilibrium, application to particles, beams, trusses and frames, shear and moment diagrams for beams, center of gravity, and moment of inertia.
<u>Topic Prerequisite:</u>	Trigonometry and elementary calculus.
<u>Course Prerequisites:</u>	MTH102 Calculus II
<u>Textbook:</u>	Hibbeler, Engineering Mechanics: Statics, Pearson, 12th Edition.
<u>Ebook:</u>	http://www.mheducation.com/highered/product/statics-mechanics-materials-beer-johnston-jr/M0073398160.html <ul style="list-style-type: none">○ Ferdinand P. Beer, Late of Lehigh University○ E. Russell Johnston, Jr., Late of University of Connecticut○ John T. Dewolf, University of Connecticut○ David F. Mazurek, U.S. Coast Guard Academy
<u>Course website:</u>	Course material will be available on web: Syllabus, homework, solution of homework, solution of Quizzes, solution of previous tests, and any other relevant materials.
<u>Instructor</u>	Fatima El Meski, PhD, PE : Office 306, Orme Gray E-mail: fatima.elmeski@lau.edu.lb
<u>Class Hours:</u>	Section 11: Lectures and Problem Sessions TR 9:30-10:45 (Business Bldg.-Room 1109)
<u>Office Hours:</u>	TTR: 10:45-12:00

Objectives:

1. To introduce vector algebra such as dot and cross products as applied to static equilibrium.
2. To analyze and check the equilibrium of statically determinate structural systems using parallelogram law and Cartesian formulation.
3. To apply center of gravity concepts in checks for static equilibrium.
4. To check truss systems for static equilibrium using joint and section methods.
5. To apply concepts of shear and bending moments diagrams to simple frame systems.

Topics:

1. Vector Algebra: Forces in Plane and in Space.
2. Equilibrium of a Particle: Plane and Space Equilibrium.
3. Force System Resultant.
4. Equilibrium of a Rigid Body.
5. Structural Analysis of Trusses.
6. Internal Actions: Axial Force, Shear Force, and Bending Moment Diagrams.
7. Center of Gravity and Centroid.
8. Moment of Inertia.

Course Outline

CHAPTER 2 Sections 2.1 – 2.7, 2.9

CHAPTER 3 Sections 3.1-3.4

TEST #1 CHAPTERS 2, and 3

CHAPTER 4 Sections 4.1-4.9

CHAPTER 5 Sections 5.1-5.6

CHAPTER 6 Sections 6.1-6.4, 6.6

TEST #2 CHAPTERS 4, 5 and 6

CHAPTER 7 Sections 7.1-7.3

CHAPTER 9 Sections 9.1-9.3

CHAPTER 10 Sections 10.1-10.4

TEST #3 CHAPTERS 7,9, and 10

FINAL EXAM CHAPTERS 2,3,4,5,6,7, 9, and 10

NOTE: Coverage of the syllabus material is contingent upon the availability of time and student progress in grasping the subjects covered.

Contribution of course to meeting requirements of ABET Criterion 5

1. Mathematics and Basic Sciences (0 Credits)
2. Engineering Topics (3 Credits)
3. General Education (0 Credits)

Assessment:

1. Individual homework assignments and participation (10%)
2. Three one-hour quizzes and a 3-hour final exam, closed book. (10 % low, 15 % medium, 25 % high + 40%)

No make up tests will be given. For excused students, Final Exam will replace missed tests. Unexcused absentees will be awarded a zero grade for missed tests.

Letter grades will be assigned as follows:	A	90 – 100
	A-	87 – 89
	B+	83 – 86
	B	80 – 82
	B-	77– 79
	C+	73 – 76
	C	70 – 72
	C-	67 – 69
	D+	63 – 66
	D	60– 62
	F	0 – 59

Outcomes:

- a) An ability to apply knowledge of mathematics, science, and engineering
 - ✓ Apply knowledge of mathematics through calculus to solve problems involving distributed forces, shear/moment equations and diagrams.
 - ✓ Apply knowledge of science through physics to solve problems involving force and moment equilibrium.
- b) An ability to identify, formulate, and solve engineering problems
 - ✓ Identify, formulate, and solve engineering problems through analysis of statically determinate truss and frame problems.

Cheating:

Students caught cheating on an exam receive a grade of zero on the exam in the first cheating attempt and a warning. Students caught cheating for the second time in the same course receive an F grade in the course and a second warning.

Student Responsibilities:

1. Students are expected to study on a regular basis (after each lecture) and not postpone studying till just before the test.
2. Student who solves homework problems on his own should do well.
3. Students who miss a test will be given a zero grade unless a convincing excuse is provided.
4. Students are responsible for all the material covered in class. Any material that is in the textbook and not covered in class will not be included in the test.
5. A well prepared student does not need to study on the night before the test.
6. Homework must be neat and legible or it will not be graded, and must be turned in at the beginning of class on the day it is due, with no exceptions.