

# El Paso Community College

## Syllabus

### Part II

## Official Course Description

<b>SUBJECT AREA</b>	<u>Engineering</u>
<b>COURSE RUBRIC AND NUMBER</b>	<u>ENGR 2332</u>
<b>COURSE TITLE</b>	<u>Mechanics of Materials</u>
<b>COURSE CREDIT HOURS</b>	<u>3                      3                      :</u> <b>Credits                      Lec                      Lab</b>

### I. Catalog Description

Stresses, deformations, stress-strain relationships, torsions, beams, shafts, columns, elastic deflections in beams, combined loading, and combined stresses. **Prerequisites: ENGR 2301 and MATH 2413 and CHEM 1311 and 1111. (3:0).**

### II. Course Objectives

Upon satisfactory completion of this course, the student will be able to:

- A. Calculate the normal and shear stress on a body.
- B. Find the strain in a deformed body.
- C. Explain the Stress-Strain Diagram.
- D. Solve for the internal axial forces.
- E. Determine the torsion on a circular shaft.
- F. Determine the maximum shear and moment on a beam using the shear and moment diagrams.
- G. Calculate the shear stresses on a beam as well as the shear flow in built-up and thin-walled members.
- H. Determine the internal stresses in thin-walled pressure vessels.
- I. Use Mohr's Circle to calculate the stresses and strains on a plane.
- J. Design a prismatic beam.
- K. Determine the reactions on indeterminate beams and shafts using the method of integration, the moment area method, and the method of superposition.
- L. Calculate the maximum deflection of a column before it starts buckling.
- M. Determine the energy and work on trusses and beams using different methods.

### III. Learning Outcomes (ACGM)

Upon successful completion of this course, students will:

1. Relate stress and strain through Hooke's law for ductile and brittle materials.
2. Calculate stress, strain and deflection in statically determinate and indeterminate members subject to axial, bending, torsional, thermal, and pressure loads, both individually and in combination.
3. Apply the principle of superposition.
4. Transform stresses and strains from one coordinate system to another.
5. Design beams and shafts.
6. Determine the critical buckling loads of columns.

#### **IV. Evaluation**

##### **A. Grading**

It is recommended that four examinations be given, including the final examination. Quizzes and/or homework may also be assigned, and those grades may be included in the final average. The weight given to exams, quizzes, and homework is at the discretion of the instructor.

Grades will be assigned based on a student's average using the scale below:

A = 90 - 100%

B = 80 - 89%

C = 70 - 79%

D = 60 - 69%

F = Below 60%

##### **B. I and W Grades**

Incomplete (I) grades will be given at the instructor's discretion and only under special circumstances. The instructor is not obligated to issue a "W" (Withdrawal) grade. Students who wish to withdraw must submit the proper paperwork to the registrar prior to the "drop" deadline. A grade of "W" cannot be issued at the end of the semester.

#### **V. Disability Statement (Americans with Disabilities Act [ADA])**

EPCC offers a variety of services to persons with documented sensory, mental, physical, or temporary disabling conditions to promote success in classes. If you have a disability and believe you may need services, you are encouraged to contact the Center for Students with Disabilities to discuss your needs with a counselor. All discussions and documentation are kept confidential. Offices located: VV Rm C-112 (831-2426); TM Rm 1400 (831-5808); RG Rm B-201 (831-4198); NWC Rm M-54 (831-8815); and MDP Rm A-125 (831-7024).

#### **VI. 6 Drop Rule**

Students who began attending Texas public institutions of higher education for the first time during the Fall 2007 semester or later are subject to a 6-Drop limit for all undergraduate classes. Developmental, ESL, Dual Credit and Early College High School classes are exempt from this rule. All students should consult with their instructor before dropping a class. Academic assistance is available. Students are encouraged to see Counseling Services if dropping because exemptions may apply. Refer to the EPCC catalog and website for additional information.

#### **VII. Title IX and Sex Discrimination**

Title 9 (20 U.S.C. 1681 & 34 C.F.R. Part 106) states the following "No person in the United States shall, on the basis of sex, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any educational program or activity receiving Federal financial assistance." The Violence Against Women Act (VAWA) prohibits stalking, date violence, sexual violence, and domestic violence for all students, employees and visitors (male and female). If you have any concerns related to discrimination, harassment, or assault (of any type) you can contact the Assistant to the Vice President for Student and Enrollment Services at 915-831-2655. Employees can call the Manager of Employee Relations at 915-831-6458. Reports of sexual assault/violence may also be reported to EPCC Police at 915-831-2200.