



ANTELOPE VALLEY COLLEGE

**Academic Affairs
Course Outline of Record**

Academic Affairs Only

- New Course
- COR Revision
- COR Update 2/14/08
- Pre Req/Advisories
- Other Changes
- Effective Date

COURSE SUBJECT & NUMBER: ENGR 220L

COURSE NAME: *Strength of Materials Lab

COURSE UNITS: 1 **COURSE HOURS:** 3 hours weekly

COURSE REQUISITES: *(Follow format of similar courses found in the college catalog.)*

Corequisite: Concurrent enrollment in ENGR 220.

COURSE DESCRIPTION: *(Write a short paragraph providing an overview of topics covered. Be sure to identify target audience--transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description.)*

A laboratory course designed to accompany ENGR 220 lecture. (CSU, AVC)

COURSE OBJECTIVES: *(Use Bloom's taxonomy to formulate concise, performance-based measurable objectives common to all students. Objectives must be closely aligned with course content, assignments, and methods of evaluation.)*

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

1. Conduct and interpret data of the following material tests:
 - a. Tensile and hardness of steel and aluminum.
 - b. Torsion of steel.
 - c. Strain gauge of metals.
 - d. Wood shear
 - e. Column
 - f. Flexure test - bending stresses
 - g. Experimental stress analysis (pressure vessels)
2. Write short technical reports as a follow up to the above tests.
3. Read and apply stress analysis literature to the analysis of the structural tests.
4. Listen to technical lectures and apply these lectures to the analysis of the structural tests.
5. Increase the ability to understand technical literature and apply these concepts to actual structural tests.

Course Subject & Number: ENGR 220L

Course Name: Strength of Materials Lab

COURSE CONTENT: *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Title 5 requires that each instructor must cover all material listed below.)*

- I. Tensile Test
- II. Torsion Tests
- III. Strain Gauges
- IV. Wood Shear
- V. Column Cement
- VI. Fatigue Experiment
- VII. Column Buckling
- VIII. Flexure Test
- IX. Experimental Pressure
- X. Report Writing Techniques

Course Subject & Number: ENGR 220L
Course Name: Strength of Materials Lab

TYPICAL HOMEWORK ASSIGNMENTS: READING, WRITING, COMPUTATIONAL, OTHER

This information is necessary for all credit courses. Assignments should be closely related to course objectives, content, and methods of evaluation. (See sample of a "Model Outline" in the AP&P Standards & Practices handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.

1. Describe nature and frequency of typical reading assignments if applicable; note if any are required:

Readings may include, but are not limited to Internet sites, periodicals, magazines, American Society of Testing Materials (ASTM) articles, instructor written materials, and textbooks.

2. Describe nature and frequency of typical writing assignments if applicable; note if any are required:

Writing assignments may include, but are not limited to, keeping a journal of lab tests and data, plus writing summary lab reports with conclusions.

3. Describe nature and frequency of typical computational assignments if applicable; note if any are required:

Routine math computations necessary to interpreting the raw data.

4. Describe other types of homework assignments that students may be asked to complete; note if any are required:

5. Describe those critical thinking skills that are derived from assignments listed above; be sure that they reflect course objectives.

Assignments which demonstrate critical thinking may include, but are not limited to, analysis and interpretation of lab testing.

6. For categories 1-4, describe the estimated time per week it would take a student to complete homework assignments.

Title 5 uses the Carnegie formula for establishing units using a 2:1 ratio as follows: 1 hr. lecture = 2 hrs .homework; 2 hrs. lecture = 4 hrs .homework; etc. For example: reading textbook—2 hours; writing reports—3 hours.

Reading: 2 hours

Writing: 1 hour

Computational: 2 hours

Other:

Course Subject & Number: ENGR 220L
Course Name: Strength of Materials Lab

METHODS OF INSTRUCTION: *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students: for example, lecture, demonstration, facilitate group work, etc. Do not list specific instructional equipment.)*

Lecture and group/team lab assignments

METHODS OF EVALUATION: *(These must be clearly related to course content, assignments, and objectives in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating various assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers or projects, problem solving exercises, or skills' demonstrations.)*

Written reports summarizing the lab tests will be evaluated based on the accuracy of the data interpretation, conclusions drawn from data interpretation, conciseness and quality of the written presentation.

Quizzes will be used to verify independent mastery of the learning objectives

Suggested Texts or other Instructional Materials *(list several when possible; include title, author, publisher, date, and latest edition.)*

Title: Mechanics of Materials, 7th Edition, 2008
Author: Hibbeler
Publisher: Prentice Hall