ME 218 – Strength of Materials
Course Information
Department of Mechanical Engineering
California State Polytechnic University, Pomona

Instructor: Mariappan “Jawa” Jawaharlal, Ph.D.
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Email: jmariappan@cpp.edu
Tel. 909-869-4127

Meeting Times: Tuesday/Thursday 01:00 PM – 02:15 PM in Room 9–305
Tuesday/Thursday 02:30 PM – 03:45 PM in Room 9–305


Requisites: C- or better in ME 214

Policy
- Display Professionalism. Professionalism means
  - You come to the class on time before the instructor. Latecomers should stay out of the class.
  - Your cell phones, pagers, hats etc. should be off. Each time your cell phone rings in the class, you will lose a quiz grade.
  - Bring a calculator and work in the class.
  - You don’t start packing up before the end of the class.
  - You don’t ask for homework extension or makeup quiz or exam
  - You don’t whine
- You must use a Cal Poly Pomona email id and check emails regularly.
- You must access this course material on blackboard regularly.
- Late assignments will not be accepted. Please do not ask me for extension
- Sloppy work will not be graded.
- Quizzes are unannounced.
- All exams and quizzes are closed book and closed notes.
- No makeup assignments/quizzes/exams will be given.
- DRC students must schedule their quizzes/exams to be taken at the same time as in class at their location
- Any form of cheating, plagiarism, and/or academic dishonesty will result in an "F" grade.

Assignments
- Homework assignments must be done neatly and stapled. Do NOT use the back of the paper. You must use the following format.
  - Print your name.
  - Write problem number.
  - Given: List the data given in the problem statement; often a sketch with appropriate dimensioning and labeling contains most, if not all of the given information. Missing a given piece of information or a key word will result in your being unable to solve a problem, which you might otherwise have been able to solve.
  - Find: State what you are trying to find in this problem.
  - Solution: Solve the problem in a neat and logical manner.
    - FBD (or space diagrams) must be drawn wherever needed. No FBD, No Credit.
    - Write each general equation before substituting in the appropriate values in a specific equation. This procedure allows you and others to follow what you have done.
    - Box around the final answer or important intermediate results.
    - Give units on the final answer. No units, No Credit.
    - Don’t miniaturize your diagrams. Draw them large enough to show all elements clearly.
Approximate Course Grading:

Homework – 10%
Quizzes – 20%
Midterm exams – 30%
Final exam – 40%

Approximate Grading Scale:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>A</td>
<td>90-100%</td>
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<tr>
<td>B</td>
<td>80-90%</td>
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<tr>
<td>C</td>
<td>70-80%</td>
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<tr>
<td>D</td>
<td>60-70%</td>
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</tbody>
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Topical Coverage

<table>
<thead>
<tr>
<th>Week</th>
<th>Topics</th>
<th>Text</th>
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</table>
| 1    | Statics review Statics
   Introduction to Stress
   Normal Stress, Shear Stress, Bearing Stress
   Stresses on an oblique plane
   Stress under general loading conditions
   Factor of Safety | 1.1-1.5 |
| 2    | Introduction to strain
   Stress-strain diagram
   True stress and engineering stress
   Hooke’s law
   Deformation of bodies
   Statically Indeterminate Structures
   Thermal Stress | 2.1-2.3 |
| 3    | Poisson’s ratio
   Generalized Hooke’s Law
   Shearing Strain
   Relation between Young’s modulus, Poisson’s ratio and Modulus of elasticity
   Saint-Venant’s Principle
   Stress Concentrations | 2.4, 2.5, 2.7, 2.8, 2.10, 2.11 |
| 4    | Torsion of Circular Shafts
   Angle of Twist
   Statically Indeterminate shafts
   Transmission shafts | 3.1-3.4 |
| 5    | Pure Bending
   Bending stresses
   Composite Beams | 4.1, 4.2, 4.4 |
| 6    | Eccentric Axial Loading
   General Case of Eccentric Loading
   Shear and Moment Diagrams | 4.7, 4.9, 5.1 |
| 7    | Relationships Between Load, Shear and Moment
   Design of Beams | 5.2, 5.3 |
| 8    | Transverse Shear
   Shearing stress in beams
   The Shear Formula | 6.1, 6.3 |
| 9    | Stresses under combined loads (without Mohr circle)
   Stress Transformation
   Plane Stress | 8.3, 7.1 |
| 10   | Principal Stresses and Maximum Shear Stress, Mohr's Circle | 7.2 |
| 11   | FINAL EXAM |