

ME 220: Materials Laboratory

<i>Course description:</i>	Mechanical behavior of materials and application to engineering structures.
<i>Number of credits:</i>	1 (0-3). This course is required.
<i>Course Coordinator:</i>	J.L. Ding
<i>Prerequisites by course:</i>	CE 215 or concurrent enrollment
<i>Prerequisites by topic:</i>	<ol style="list-style-type: none">1. Concepts of stress, strain, and their relationships.2. Axial, bending, torsion, shear loads, and their combinations.
<i>Postrequisites:</i>	MSE/ME 413; ME 316 (recommended)
<i>Textbooks/other required materials:</i>	Ding, J.L., Sheldon, G.L. <i>Mechanics of Materials Laboratory Notes</i> , WSU Cougar Copies.
<i>Course objectives:</i>	<ol style="list-style-type: none">1. To provide the students with hands-on experience in various material testing and experimental stress analysis methods, and engineering data analysis and report writing.2. To familiarize the students with various types of mechanical behavior in response to different loading conditions.
<i>Topics covered:</i>	<ol style="list-style-type: none">1. Tension test2. Impact test3. Fatigue test4. Stress wave experiment5. Torsion test6. Strain gages7. Combined stress analysis8. Photoelasticity
<i>Expected learning outcomes:</i>	<ol style="list-style-type: none">1. Gain hands-on experience in conducting tension, torsion, impact, and fatigue tests.2. Gain hands-on experience in using strain gages for one and two dimensional stress analysis.3. Be able to extract mechanical properties of materials from tension, torsion, impact, and fatigue test data.4. Appreciate the difference between the ductile and brittle behavior of materials and the environmental effects including temperature on such behavior.5. Be able to apply Hooke's law in one and two dimensional stress analysis.6. Be able to logically arrange, present, and summarize findings in a written report.
<i>Class schedule:</i>	One 50-minute lecture session every two weeks, for one semester.

Laboratory schedule: One 2-hour and 50-minute laboratory session every two weeks, for one semester.

Contribution to meeting the professional component: Engineering Topics

Relationship of course to student outcomes: Meets:
1. School of MME ME educational objectives: 1, 2, 3
2. School of MME ME program outcomes: 1, 3, 6
3. ABET EC2019, Criterion 3 program outcomes: 1, 3, 6

Prepared by: Andrea Butcherite and J.L. Ding

Date: May 30, 2018

POLICIES

A. Reasonable Accommodation (the nature of the particular course determines which one applies):

- Pullman Campus. Reasonable accommodations are available for students with a documented disability. If you have a disability and need accommodations to fully participate in this class, please either visit or call the Access Center (Washington Building 217; 509-335-3417) to schedule an appointment with an Access Advisor. All accommodations MUST be approved through the Access Center.
- WSU Online Course. Reasonable accommodations are available in online classes for students with a documented disability. All accommodations must be approved through your WSU Disability Services office. If you have a disability and need accommodations, we recommend you begin the process as soon as possible. For more information contact a Disability Specialist on your home campus: Pullman or WSU Online (<http://accesscenter.wsu.edu>), Spokane (<http://spokane.wsu.edu/students/current/studentaffairs/disability/>), Tri-Cities (<http://www.tricity.wsu.edu/disability>), Vancouver (<http://studentaffairs.vancouver.wsu.edu/student-resource-center/disability-services>).

B. Academic Integrity

WSU expects all students to behave in a manner consistent with its high standards of scholarship and conduct. Students are expected to uphold these standards both on and off campus and acknowledge the university's authority to take disciplinary action. The Standards of Conduct for Students can be found at <http://conduct.wsu.edu>.

C. WSU Safety

WSU is committed to maintaining a safe environment for its faculty, staff, and students. Safety is the responsibility of every member of the campus community and individuals should know the appropriate actions to take when an emergency arises. In support of our commitment to the safety of the campus community the University has developed a Campus Safety Plan, <http://safetyplan.wsu.edu>. It is highly recommended that you visit this web site as well as the University emergency management web site at <http://oem.wsu.edu/> to become familiar with the information provided.