



BAKER COLLEGE
STUDENT LEARNING OUTCOMES

ME 3220 Solid Mechanics and Vibrations Lab
1 Semester Hours

Student Learning Outcomes & Enabling Objectives

1. Analyze experimental results obtained in the behavior of materials:
 - a. Interpret results from Shear behavior of materials under tensile loading experiment.
 - b. Interpret results from Stress-Strain behavior of materials under compression loading experiment.
 - c. Interpret results from Angle of twist in solid rods in pure torsion experiment.
 - d. Interpret results from the modulus of elasticity – flexure experiment.
 - e. Interpret results from the Poisson's ratio – flexure experiment.
 2. Analyze experimental results obtained in deflection in beams lab experiment:
 - a. Interpret results from the fixed and cantilever beams experiment.
 - b. Compare experimental and theoretical results.
 3. Analyze experimental results obtained in vibration lab experiments:
 - a. Interpret results from free vibration of undamped single degree-of-freedom systems experiment.
 - b. Interpret results from free vibration of viscously damped single degree-of-freedom systems experiment.
 - c. Interpret results from the normal mode analysis
 4. Analyze solid mechanics and vibrations applications problems using finite element analysis software ANSYS:
 - a. Simulate behavior of beams and construct shear and moment diagrams
 - b. Simulate free vibration of two-DOF system.
 - c. Simulate behavior of pressure vessels.
 - d. Simulate behavior of a cantilever bent pipe under combined loadings.
 - e. Simulate free vibration of a simple beam
 - f. Simulate forced vibration of a simple beam
 5. Write professional laboratory reports using quality technical writing skills:
 - a. Create well-formatted and -labelled graphs and diagrams.
 - b. Compose clear, technically sound reports using conventional engineering nomenclature.
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These SLOs are not approved for experiential credit.

Effective: Fall 2017