Course Title: **EGT 231: Strength of Materials**

Course Leader: **Adam C. Bridendolph**

Expected Learning Outcomes for Course:

Upon successful completion of this course, students will be able to:

1. Calculate bearing stresses and find shear stresses from shearing forces
2. Understand strain and Hooke's law
3. Find shear stresses from applied torque
4. Draw shear and bending moment diagrams
5. Use the flexure formula to find stresses in beams
6. Find transverse shear stresses
7. Analysis composite beams
8. Select beams for external load conditions
9. Calculate the deflection of beams from point and continuous loads
10. Use Mohr's circle to find combined stresses
11. Design axially loaded columns

Assessment:
(How do students demonstrate achievement of these outcomes?)

Four exams, homework assignments

Validation:
(What methods are used to validate your assessment?)

Feedback from internship employers. Also, can students successfully apply concepts learned in this course to solve problems encountered in EGT 234: Machine Design?

Results:
(What does the data show?)

Students typically perform fairly well in this course if they did well in EGT 136: Mechanics. Shear and bending moment diagrams tends to be the most difficult topic for students to grasp in this course.

Follow-up:
(How have you used the data to improve student learning?)

More time and emphasis has been placed on shear and bending moment diagrams. An additional three-hour lecture has been added to emphasize this topic and provide practice for students.

Budget Justification:
(What resources are necessary to improve student learning?)

Purchase material for structural stress analyzer (tensile tester) so students can analyze data and create stress-strain diagrams from testing metal specimens.