Course Outcomes Guide (COG)

Course Title: EGR 203 Mechanics of Materials **Date: 5/2/20 | 2**

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Expected Learning Outcomes

1. Determine the internal forces and moments produced in objects subjected to various forces.
2. Calculate the stress and strain in materials subjected to various loadings.
3. Calculate material properties (E, G, v) and apply these properties to the solution of engineering problems and the derivation of basic equations for stress.
4. Calculate centroids and moments of inertia for plane areas
5. Solve problems relating to stresses in beams and shafts (bending, shear, torsion and axial)
6. Solve beam deflection problems
7. Analyze statically indeterminate shafts and beams
8. Solve stress transformation problems and principal stresses using Mohr's circle
9. Perform stress analysis under combined loading – 2D and 3D
10. Perform analysis of columns

Assessment
Student learning outcomes will be testing through homework problems, design projects, midterm and final exams. The assessments are attached and can be found in the labeled appendix. The design project is currently in development and is scheduled to be implemented in the Spring 2013 semester. The other assessments are currently in place and have been implemented for the Spring 2012 semester.

Validation
See above.

Results
Student assessment is pending. Data will be collected during the Spring 2012 and Spring 2013 semesters and analysis will be performed following each semester. Adjustments to assessments will be made based on data collected over a 3 year period.

Follow-up (How have you used or how will you use the data to improve student learning?)
Data analysis will be used to identify areas where students are performing below satisfactory levels and make the necessary adjustments.

Budget Justification
The purchase of a flexible I-beam for demonstration purposes and a structures set for demonstration and design projects is required. The model numbers and cost of the resources are listed below.