

Course Outcomes Guide (COG)

Course Title: EGT 231 Strength of Materials

Date: December 20, 2017

Course Team: Dr. Olu Bamiduro

Expected Learning Outcomes

1. Explain and apply advanced knowledge of components in terms of principles of strength of materials.
2. Determine the internal forces and moments produced in objects subjected to various forces.
3. Calculate the stress and strain in materials subjected to various loadings.
4. Calculate material properties (Young's Modulus, Shear Modulus and Poisson's Ratio) and apply these properties to the solution of engineering problems basic equations for stress.
5. Calculate centroids and moments of inertia for plane areas.
6. Test and analyze systems under load.
7. Determine the stresses in beams and shafts.
8. Compute the Elongation of axial members, deflection of beams and shafts.
9. Analyze statically indeterminate shafts and beams.
10. Solve stress transformation problems and principal stresses using Mohr's circle.
11. Understand the stress analysis under combined loading – 2D and 3D.
12. Analyze Buckling of Columns.

Assessment

The assessment of the course will be administered to all sections of EGT 231 by the below methods:

1. Examinations
2. Homework Assignments
3. Student assigned Chapter-Section Presentations

Validation

The following criteria will be used to validate EGT 231:

1. The ability to apply knowledge of mathematics, science, and engineering.
2. The ability to design and conduct experiments, as well as to analyze and interpret data.
3. The ability to identify, formulate, and solve engineering problems.
4. The ability to communicate effectively.
5. The ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

Results Data may be seen in table below:

| | FALL 2017 | SPRING 2018 | FALL 2018 |
|----------------------|-----------|-------------|-----------|
| # of Active Students | 7 | N/A | |

| | | | |
|---------------------------------------|------------------------------|--|--|
| # unofficially walked away from class | N/A | | |
| % of success | 83.3% | | |
| Final Exam Score (Average) | 93.1% | | |
| Mean Course Grade | 2.25 | | |
| Areas of difficulty in course content | Analysis of Truss Structures | | |

Follow-up (How have you used or how will you use the data to improve student learning?)

Students had a difficult time in applying force vector and trigonometry applications to analyze truss structures. As a remedy, an aggressive approach in understanding the fundamentals taught in EGT 136 has to be addressed.

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

None at the moment