EGN 3331 STRENGTH OF MATERIALS
Course Syllabus

1. **Course number and name:** EGN 3331 Strength of Materials

2. **Credits and contact hours:** 3 credits / Three 50 minute lectures each week

3. **Instructor’s or course coordinator’s name:** Dr. H. Mahfuz


5. **Specific course information:**

   (a) **Brief description of the content of the course (catalog description):** The course deals with concepts of stress and strain; mechanical properties of materials, force, deformation and stress analysis of structural members; stress and strain transformations; principal stresses; failure theories; and concept of buckling.

   (b) **Prerequisites:** EGN 3311 Statics (with a grade of C or better).

   (c) **Indicate whether a required, elective, or selected elective course in the program:** Required

6. **Specific goals for the course:**

   (a) **Specific outcomes of instruction (course specific objective):** The objective of the course is to introduce to the students the strength, deformation, and stability analysis of simple structural design.

   (b) **Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.** The learning outcomes of the course (and related ABET Criterion 3) outcomes are:

   1. Students will understand the concepts of stress and strain. (a,e,k)
   2. Students will be able to conduct stress analysis for a member under axial load, torque, transverse load, or their combination. (a,e,k)
   3. Students will learn the concept of principal stresses. (a,e,k)
   4. Students will learn the concept of statically indeterminate structures, and be able to use the compatibility conditions to solve simple statically indeterminate problems. (a,e,k)
   5. Students will be able to effectively communicate in writing a report. (g)

7. **Brief list of topics to be covered:**

   - Concepts of stress and strain
   - Mechanical properties of materials
   - Axial load, torsion, bending and shear, and combined loadings
   - Thermal stresses and strains for axial loading
   - Stress and strain transformations, principal stresses
   - Deflection of beams and shafts
   - Statically indeterminate problems