1. **Course number and name**

   **MEE 452: Aircraft and Automobile Structures**

2. **Credits and contact hours**

   3 credits; 3 hours per week

3. **Instructor’s or course coordinator’s name:**
   Course coordinator: Masoud Rais-Rohani, Richard C. Hill Professor, Mechanical Engineering

4. **Text book, title, author, and year**

   None

   **a. other supplemental materials**

   An extensive set of instructor-developed handouts will be used in lieu of a textbook.

5. **Specific course information**

   **a. brief description of the content of the course (catalog description)**


   **b. prerequisites or co-requisites:**

   Prerequisite: MEE 251

   **c. indicate whether a required, elective, or selected elective course in the program**

   Technical elective for Mechanical Engineering

6. **Specific goals for the course**

   **a. specific outcomes of instruction.**

   By the end of this course, students will demonstrate an ability to:

   - Summarize key attributes of aircraft and automobile structures, loads, choice of materials and manufacturing techniques, and regulations governing their safety (ABET Student Outcomes a, e, k).
   - Analyze thin-walled and stiffened structural members under torsion, bending, and shear loading and calculate the resulting stresses (ABET Student Outcomes a, e, k).
   - Predict elastic or inelastic buckling instability in columns with stable cross-sections (ABET Student Outcomes a, e, k).
   - Predict the bending and buckling responses of thin rectangular plates (ABET Student Outcomes a, e, k).
   - Determine the compressive strength and failure mode of structural members with unstable cross-sections (ABET Student Outcomes a, e, k).
   - Analyze and design sheet-stiffener panels under axial loading (ABET Student Outcomes a, e, k).
• Perform preliminary analysis of wing and fuselage structures (ABET Student Outcomes a, e, k).

b. explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.

Course addresses ABET Student Outcomes: [a] an ability to apply knowledge of mathematics, science, and engineering, [e] an ability to identify, formulate, and solve engineering problems, [k] an ability to use the techniques, skills and modern engineering tools necessary for engineering practice.

7. Brief list of topics to be covered

• Anatomy, Materials, Manufacturing, Loads and Standards
• Elastic Torsion and Bending of Thin-Walled Structures
• Buckling of Structural Members with Stable Cross-Sections
• Bending and Buckling of Thin Rectangular Plates
• Strength of Structural Members with Unstable Cross-Sections
• Analysis and Design of Sheet-Stiffened Panels