Instructor:
Michael Q. Edens, PhD
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Office Hours: M: 3:05-3:55, W,F: 10:00-11:00, by appointment, when door is open

Course Web Site:
https://ecat.montana.edu/

Late assignments will be deducted 50% and will not be graded if submitted more than 3 days late without a university excused absence. Lowest quiz and assignment grades will be dropped.

A (93-100%); A- (90-92%)
B+ (87-89%); B (83-86%); B- (80-82%)
C+ (77-79%); C (73-76%); C- (70-72%)
D+ (67-70%); D (63-66%); D- (60-62%)
F (BELOW 60%)

Student Conduct
You are expected to follow student conduct guidelines outlined in the MSU Student Conduct Guidelines (http://www2.montana.edu/policy/student_conduct/).

Grading
Midterm, Final, and Quizzes (50%),
Project (25%),
Homework and class participation (25%). Homework will include applications of aerospace engineering and science.

ME students who are exempt from the Board of Regents C- policy must understand that a D-grade is not considered passing by the M&IE Department. A grade of D- in any required course must be repeated, with a D or higher grade earned, for it to apply to degree requirements.

Computer and Laboratory Usage
Students will use a computer programs for solving aerospace problems. Students will engage in a design project to utilize the concepts.
**Course Outcomes**

Upon Completion of this course, students will have demonstrated the ability to:

- calculate the performance of aerospace structures
  - lift
  - drag
  - propulsion
  - dynamics
- to apply fundamental engineering mechanics and principles for the design and analysis of aerospace systems
- combine the above principles for a design and analysis project
- to recognize the applications of other engineering and science courses to aerospace systems

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**Course Topics as time permits**

1 **The First Aeronautical Engineers**
   A brief history of aerospace engineering and science; emphasis on 20\textsuperscript{th} Century progress and achievements

2 **Fundamental Thoughts**
   Basic aerospace principles and potential

3 **The Standard Atmosphere**
   Atmospheric aerospace vehicles and propulsion

4 **Basic Aerodynamics**
   Lift, Drag, Thrust, Vector Mechanics

5 **Airfoils, Wings, and Other Aerodynamics Shapes**
   Basics for heavier than air flight

6 **Elements of Airplane Performance**
   Speed, climb, maneuverability, energy management, dynamics

7 **Principles of Stability and Control**
   Control of flight vehicles

8 **Space Flight (Astronautics)**
   Introduction to space vehicles and structures

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**Aircraft structures - Notes**
**Design Project**
Design concepts; small group design problem using aerospace principles presented in class. Introduction and updates will be presented periodically throughout the semester.