

AME 502: Modern Topics in Aerospace Design (Fall 2024)

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Office Hours: Before or after class; please email or text me to set up an appointment

Class Hours and Locations: Fridays 1-3.30 PM GFS 210

Course Background: The AME department desires to take advantage of the wealth of local aerospace industry by direct involvement of local companies and other experts in this class. The class adds relevance to the curriculum content and helps to increase the student's awareness of the challenges faced by contemporary aerospace development projects and in general adds to the richness of the student experience.

Course Description: This is a 3-credit hour class for seniors, masters, and doctorate students. The course will include two student team projects and several lectures by industry experts on a variety of topics such as aircraft conceptual design, electric aircraft, bio-mimetic flight, flight performance analysis, aerodynamics, structures, propulsion and flight controls.

Learning Objectives: The essence of this course is to prepare the student for a career in the aerospace industry by learning to:

- 1) work on assigned technical projects as part of a team;
- 2) conduct independent research on topics of contemporary relevance to the aerospace industry;
- 3) interact with key industry technical experts on their assigned self-study topics;
- 4) evaluate the state-of-the-art of the existing research, evaluate the pros and cons of competing approaches and propose preferred or new solutions; and,
- 5) effectively communicate the results of the work in both verbal/briefing chart form and in final technical reports.

Recommended Preparation: This class is open to seniors, masters and doctoral students with a strong interest in the aerospace industry. These are no prerequisites or co-requisites. But it is recommended that the students have a strong background in the following areas: AME 441 Senior Project, or equivalent; AME 481 Design, or equivalent; Student interest in overall aerospace vehicle design.

Course Notes: Will be provided as needed

Technological Proficiency and Hardware/Software Required: The course will require class briefings using Microsoft Power Point. Self-study research may also require engineering analysis or trade studies. MS Excel and MATLAB expertise would be very helpful.

Required Reading and Supplementary Materials: No textbook is required to be purchased by the students. Extensive literature research will be required as part of the team self-study projects. The industry panel members and the instructor may recommend additional reading materials and website reference resources during the semester. Three reference textbooks are available to each team by the AME department.

- 1) Fundamentals of Aircraft & Airship Design, Volume 1, Aircraft Design, Leland Nicolai and Grant Carichner.
- 2) Fundamentals of Aircraft & Airship Design, Volume 2, Airship Design and Case Studies, Leland Nicolai and Grant Carichner.
- 3) The Simple Science of Flight by Hank Tennekes.

Grading: Students will be graded based upon:

- Classroom/Panel Participation (25%)
- Team Projects - Presentations, Reports and Individual Contributions (50%)
- Written Reports on Guest Lectures (25%)

Academic Integrity: The Viterbi School of Engineering adheres to the University's policies and procedures governing academic integrity as described in SCampus. Students are expected to be aware of and to observe the academic integrity standards described in SCampus, and to expect those standards to be enforced in this course.

Students with Disabilities Any Student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me as early in the semester as possible. DSP is located in STU 301 and is open 8:30 a.m. - 5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776.