

EAS 4710: Aerospace Design 2
Spring 2021 Syllabus – Course Section 0081

Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on announced in class and on CANVAS.

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Office hours: TBD

Course Description: This course is an introduction to aircraft design. The Design Process, Airfoil and Geometry Selection, Thrust-To-Weight Ratio and Wing Loading, Sizing, Crew Station, Payload, and Passengers, Propulsion and Fuel System, Landing Gear and Subsystems, Aerodynamics, Basic Propulsion, Structures and Loads, Stability, Control, and Handling Qualities, Performance and Flight Mechanics, as well as Cost Analysis, are some of the areas covered in the course.

Recommended Textbook:

Daniel P. Raymer, "Aircraft Design : A Conceptual Approach,"

John D. Anderson Jr., "Aircraft Performance and Design,"

Lecture times: T: 4th, 5th period, R: 5th period

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live class. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

Relationship of Course to Program Outcomes

The course achieves several ABET outcomes along with program-specific outcomes for the Aerospace Engineering degree.

- (a) Apply knowledge of mathematics, science, and engineering (HIGH COVERAGE : The instruction of flight dynamics builds upon previous courses including statics, dynamics, fluids, and control. The students will apply the mathematics and fundamental principles from those courses to the derivation and understanding of flight dynamics.)
- (e) Identify, formulate, and solve engineering problems (MEDIUM COVERAGE : The students will be presented with a basic aircraft and shown how to evaluate the flight dynamics.)
- (g) Communicate effectively (MEDIUM COVERAGE : The course will teach nomenclature and terminology that is common with the aerospace community. The students will learn how to properly communicate the concepts of design to other professionals.)
- (i) Recognize the need for, and engage in life long learning (LOW COVERAGE : The course will demonstrate several examples that were challenging for professionals. These examples will indicate how the basic theory was appropriate, but insufficient, to completely solve problems.)
- (j) Understand contemporary engineering issues (LOW COVERAGE : The students will be exposed to several examples of current and planned flight projects from the aerospace industry.)
- (k) Use the techniques, skills, and modern engineering tools necessary for engineering practice (MEDIUM COVERAGE : The students will learn state-of-the-art techniques and how to apply these techniques to aerospace systems.)
- (A5) Possess knowledge of aerodynamics, aerospace structures and materials, flight mechanics, stability and controls, propulsion, design of aerospace systems and mathematics and numerical methods (HIGH COVERAGE : The students will analyze aircraft to determine their flight dynamics and associated stability characteristics.)

Course Topics:

Chap 2 Overview of Design Process	Chap 12 Aerodynamics
Chap 3 Sizing from a Conceptual Sketch	Chap 13 Propulsion
Chap 4 Airfoil and Wing/Tail Geometry Selection	Chap 14 structures and Loads
Chap 5 Thrust-to-Weight Ratio and Wing Loading	Chap 16 Stability, control and handling Qualities
Chap10 Propulsion and Fuel System Integration	Chap 17 Performance and Flight Mechanics

Assignments:

We will design a light attach aircraft for this semester.

The whole project will be divided into about 10 segments and a report of each segment will be due throughout the semester. (60%)

Final report (15%)

Final presentation (10%)

Peer evaluation. (15%)

Proposed grading scale

93-100 = A, 90-92.9 = A-, 87-89.9 = B+, 83-86.9 = B, 80-82.9 = B-, 77-79.9=C+, 73-76.9=C, 70-72.9 = C-, 67-69.9=D+, 63-66.9 = D, 60-62.9 = D-, <60 = E

N.B. A grade of C- will not be a qualifying grade for critical tracking courses. Furthermore, in order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Miscellaneous Policies: Students will be held responsible for knowledge of all scheduling and policy announcements made in class.

Academic Honesty: UF students are bound by The Honor Pledge which states

We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code.

On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “

On my honor, I have neither given nor received unauthorized aid in doing this assignment

The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Course Evaluations: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online *via* GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

Software Use: All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and peers to the highest standards of honesty and integrity.

Student Privacy: There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information see: <http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Accommodations For Disabilities: Students with disabilities requesting accommodations should first register with the Disability Resource Center (352-392-8565, <https://www.dso.ufl.edu/drc>) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure as early as possible in the semester.

Commitment To A Safe And Inclusive Learning Environment: The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. If you feel like your performance in class is being impacted by discrimination or harassment of any kind please contact your instructor or any of the following:

- Your academic advisor or Graduate Program Coordinator (Dr. Sarntinoranont)
- Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
- Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
- Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@ufl.edu

Campus Resources:

[Health and Wellness](#)

U Matter, We Care:

Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to,

Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: <http://www.counseling.ufl.edu/cwc>, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS) at Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or <http://www.police.ufl.edu/>.

Sexual Discrimination, Harassment, Assault, Or Violence: If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Academic Resources

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. <https://www.crc.ufl.edu/>.

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. <https://teachingcenter.ufl.edu/>.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. <https://writing.ufl.edu/writing-studio/>.

Student Complaints Campus: https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf.

On-Line Students Complaints: <http://www.distance.ufl.edu/student-complaint-process>.