# Aerospace Design 2
**EAS 4710 : Section 0081**
**Class Periods:** T 4th period (1040-1235) and Th 5th period (1145-1235)
**Location:** Lar 239
**Academic Term:** Spring 2020

**Instructor**
Rick Lind
ricklind@ufl.edu
352.672.0604
Office Hours in MAE-A 324 : T,Th (12:50-1:40)

**Teaching Assistants**
Matthew Silic
msilic@ufl.edu
Office Hours in MAE-A 321 : M,W (9:35-11:30)

**Course Description**
(3 credits) Second part of EAS 4700-4710 sequence.

**Course Pre-requisites**
EAS 4400

**Course Objectives**
This course provides an introduction to the design of aircraft. Students explore the interactions and integration of disciplines related to courses taken throughout their undergraduate curriculum. The material and tasks are oriented towards developing an understanding of aircraft and the role of design in achieving mission performance.

**Professional Component (ABET)** This course will instruct students on formulating and understanding the mathematics of flight dynamics as applied to aerospace systems.

**Relation to Program Outcomes (ABET)**

|     | Outcome | Coverage |
|-----|---------|----------|
| (1) | an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics | HIGH |
| (2) | an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors | MEDIUM |
| (3) | an ability to communicate effectively with a range of audiences | HIGH |
| (4) | an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts | HIGH |
| (5) | an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives | HIGH |
| (6) | an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions | MEDIUM |
| (7) | an ability to acquire and apply new knowledge as needed, using appropriate learning strategies | LOW |

**Materials and Supply Fees**
$111 for components to build and test an aircraft design

**Required Textbooks and Software**
This course does not have a required textbook.

**Recommended Materials**

- E-Books that everyone can always access through the UF library
    - Ajoy Kumar Kundu, "*Aircraft Design*," Cambridge University Press, New York, NY, 2010.
    - Leland M. Nicolai and Grant E. Carichner, "*Fundamentals of Aircraft and Airship Design : Volume I - Aircraft Design*", AIAA, Reston VA, 2010.
- Printed books that can be checked out through the UF library
    - Daniel P. Raymer, "*Aircraft Design : A Conceptual Approach*," AIAA, Reston VA, 2006.
    - John D. Anderson Jr., "*Aircraft Performance and Design*," McGraw-Hill, Boston MA, 1999.

**Course Schedule**

The course will provide experience at design of an aircraft. The students will design a complete system using knowledge such as aerodynamics and structures and controls and propulsion from previous courses. That baseline design will then be improved by considering additional issues such as guidance and navigation, sensor modeling, avionics, actuator characteristics, uncertainty and mission performance.

**Attendance and Expectations**

Students are required to attend lectures for which they are assigned. Some lectures will present team-based material for which everyone must attend while some lectures will present discipline-based material for which only specialists must attend. Students will be given 1-week advance notice as to who must attend upcoming lectures. Some additional attendance may be required for out-of-lecture events related to experimental testing.

**Evaluation of Grades**

The students are expected to demonstrate a sound understanding of the foundations in aerodynamics, structures, controls and propulsion in the context of design. A project is assigned that will require design of an aircraft to achieve mission performance. The grading will reflect the degree to which the foundations in various disciplines are combined and analyzed to achieve the mission objectives.

| | |
|---|---|
| 20% | preliminary design report |
| 55% | critical design report |
| 15% | presentation |
| 10% | peer grades |

**Grading Policy**

| | A | B | C | D |
|---|---|---|---|---|
| + | | 80-77 | 60-47 | 40-37 |
| | 100-83 | 77-63 | 57-43 | 37-23 |
| - | 83-80 | 63-60 | 43-40 | 23-20 |

**Grade Verification**

Any submission for which a student wants the grade to be re-evaluated must be given to the instructor within 48 hours, and before the start of the subsequent lecture, of when the graded exams were available to the class.

**Missed-Exam Policy**

The course will not have exams; however, all reports and presentations must be submitted by the deadline to be graded. Any late submissions will not be accepted.

**Cheating Policy**

Submissions must strictly reflect your own work so any use of unauthorized materials (other students, notes, phones, computers, books) will be strictly penalized. Any submission with material that is not unique to the student will be reported to the Dean of Students Office and will result in automatic grade of 0 for that submission.

**Students Requiring Accommodations**

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.

**Course Evaluation**

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/`.

**University Honesty Policy**

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.

**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
- 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@eng.ufl.edu

**Software Use** All faculty, staff, and students 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 our 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, please see: http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html

**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 so that the U Matter, We Care Team can reach out to the student in distress. 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):** Student Health Care Center, 392-1161.
  - **University Police Department:** at 392-1111 (or 9-1-1 for emergencies), or http://www.police.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.
  - **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.