

EAS 4300: Aerospace Propulsion Syllabus -- Spring 2022

(Modifications to this syllabus may be required during the semester. Any changes to the syllabus will be posted on the course web site and announced in class.)

1. **Catalog Description:** Basics of air-breathing and rocket engines used in flight systems. Credits: 3
2. **Pre-requisites:** EGN 3353C (*Fluid Mechanics*), EML 3100 (*Thermodynamics*), EAS 4132 (*Compressible Flow*).
3. **Course Objectives:** This course provides an introduction level coverage of processes in propulsion systems for aircraft applications.
4. **Contribution of course to meeting the professional component:** This course is designed for mechanical and aerospace engineering students. The course content is 80% engineering science and 20% design.
5. **Relationship of course to program outcomes:** This course achieves the following ABET outcomes [note that the outcome number corresponds to the respective ABET outcomes (a) through (k)]: (a) Apply knowledge of mathematics, science, and engineering (high coverage, addressed by lectures and example problems, assessed by exams and homework) (e) Identify, formulate, and solve engineering problems
6. **Instructor:**
Corin Segal.
Telephone: 392-6132
Web site: <http://elearning.ufl.edu> (e-learning in canvas system)
Office hours will take place via Zoom MWF 9:30 – 10:30.

Note: We can communicate during office hours, at the end of each class session or via telephone 392-6132. E-mail is an inefficient means of communication for our purpose, therefore, we shall not use it.

Teaching Assistants have not been assigned for this course.

7. **Meeting Times and Location:**
 - MWF 5 Period (11:45-12:35) in FLG 280.
 - You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
 - If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
 - If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
 - UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.

- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

8. **Textbooks Required:** *MECHANICS AND THERMODYNAMICS OF PROPULSION, 2ND EDITION*, by Hill and Peterson, 2nd Edition, found in pdf format at:

<https://soaneemrana.org/onewebmedia/MECHANICS%20AND%20THERMODYNAMICS1.pdf>

https://www.nasa.gov/sites/default/files/734673main_Equations-Tables-Charts-CompressibleFlow-Report-1135.pdf

9. **Course Outline:**

- Introductory concepts – Compressible flow, Cycle thermodynamics
- Thrust and Performance
- Gas turbine cycles
- Aircraft Engine Inlets and Nozzles
- Combustion Chambers and Afterburners
- Compressor Aerodynamics
- Aircraft Engine Component Matching

10. **Attendance and Expectations:** Lecture attendance is imperative. Although attendance will not be taken or used in assigning grades, students will be held responsible for knowing all changes made to scheduling and all class announcements.

Note: 1. Although information will be posted on the website, class announcements prevail in case there are discrepancies.

2. **UF General Statement:** Our class sessions may be audio visually recorded for students in the class to refer and for enrolled students who are unable to attend live. 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.

11. **Assessment Methods and Grading:**

a. **Homework** will be assigned periodically during the semester. Homework will not be graded. Selected solutions will be posted online. **PLEASE REGARD THE ASSIGNED HOMEWORK AS MINIMUM NECESSARY TO PREPARE YOU FOR EXAMINATION. ADDITIONAL PROBLEMS FROM THE BOOK OR OTHER SOURCES ARE RECOMMENDED.**

Please submit your solutions ONLY via Canvas. The HW problems may be downloaded from the course web site <https://lss.at.ufl.edu/> (use Canvas system).

Late assignments will not be accepted. The lowest grade for the HW problems will be dropped.

b. There will be **four exams** during the semester in class. All exams will be cumulative but will emphasize the most recently covered material. The exams will take place during the regular class period. Exam dates will be announced at least two weeks ahead.

Your lowest score on an exam will be dropped with your exam grade being based on the other three exams.

Dropped exam and HW grades are designed to mitigate exceptional conditions; consequently there will be NO make-up exams – see below for more details.

If a student feels that an exam or homework is graded unfairly, or if there is an error in the grading, please bring it to the instructor attention within a week after the graded material is handed back. Scores will not be reconsidered beyond the one week period. The relative weighting of the HW Problems and Exams in the final grade will be:

- a. HW 25%
- b. Exams 75%

12. Grading Scale:

| | | | | |
|---------------|---------------|---------------|--------------|-------------|
| 93 – 100: A | 87 – 89.9: B+ | 77 – 79.9: C+ | 60 – 69.9: D | 0 – 59.9: E |
| 90 – 92.9: A- | 83 – 86.9: B | 73 – 76.9: C | | |
| | 80 – 82.9: B- | 70 – 72.9: C- | | |

13. Make-up Policy: No late assignments will be accepted. There will be no Make-up exams

Note: The lowest EXAM grade will be dropped. This has the ONLY purpose to accommodate exceptional situations that may appear during the semester. It is NOT meant to eliminate low grades.

14. Honesty Policy and Ethical Considerations: All students admitted to the University of Florida have signed a statement of academic honesty committing to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.

15. Accommodation for Students with Disabilities: Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

16. UF Counseling Services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

If I can help at any time let me know.

17. 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 our peers to the highest standards of honesty and integrity.

18. In-Class Recording:

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A “class lecture” is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session. Publication without permission of the instructor is prohibited. To “publish” means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services.

A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.