Aerospace Propulsion

EAS 4300: Section 5041
Class Periods: MWF, period 5, 11:45AM-12:35PM
Location: WEIL 270
Academic Term: Spring 2026

Instructor:
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Office Phone Number TBA
Office Hours: Monday and Wednesday 1:00 pm to 2:00 pm
Office Location: NEB 525

Teaching Assistant:
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Course Description
Basics of air-breathing and rocket engines used in flight systems. 3 credits.

Course Pre-Requisites / Co-Requisites

EGN 3353C (Fluid Mechanics),
EML 3100 (Thermodynamics),
EAS 4132 (Compressible Flow).

Course Objectives

This course provides an introduction of processes in propulsion systems for aircraft applications. Focus on gas-turbine components, systems testing and systems analysis. The objective of the course is to introduce students to basic concepts of aerospace propulsion and the current art. Students will also be familiar with inlets and nozzles and gas turbine components, controls and systems analysis for flight propulsion systems.

Relation to Program Outcomes (ABET): 1 - H, 3 – L (H-Strong support, L-Minimal support)

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	
3. An ability to communicate effectively with a range of audiences	Low
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	
5. An ability to function effectively on a team whose members together provide leadership, create a	

collaborative environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	

Required Textbooks and Software

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

https://soaneemrana.com/onewebmedia/MECHANICS%20AND%20THERMODYNAMICS1.pdf

https://www.grc.nasa.gov/www/k-12/airplane/Images/naca1135.pdf

Course Schedule

2026	Topics	Chapter
12-Jan	1 - Introduction	1.1 – 1.2, 1.4
14-Jan	2 -Basic Concepts	2.1 – 2.2
16-Jan	2 -Basic Concepts	2.3
19-Jan	Holiday - no Class	
21-Jan	3 - COMBUSTION THERMODYNAMICS	2.4
23-Jan	No class - Self Review	
26-Jan	4 - COMBUSTION THERMODYNAMICS	2.4
28-Jan	5 - Gas dynamics -	3.1 – 3.3
30-Jan	5 - Gas dynamics - 2	3.4 – 3.5
2-Feb	5 - Gas dynamics - 3	3.6
4-Feb	Review	
6-Feb	Test #1 - in class	
9-Feb	6 - Thermodynamics of jet engines	5.1 – 5.2
11-Feb	7 - Ramjets	5.3
13-Feb	8 - Turbojets	5.4
16-Feb	8 - Turbofans	5.6
18-Feb	8 - Turbofans	5.6
20-Feb	9 - Engine/aircraft performance	5.7
23-Feb	10 - Inlets	6.1 –6.3
25-Feb	11 - Combustors	6.4
27-Feb	11 - Combustors	6.6
2-Mar	12 - Afterburners and Ramjets Combustors	6.5
4-Mar	13 - Nozzles	6.7
6-Mar	Review	
9-Mar	Test #2 - in class	
11-Mar	14 - Compressors	7.1 – 7.3
13-Mar	15 - Compressors 2	7.4 – 7.5
	Spring Break 3/14-3/22	

23-Mar	16 - Compressors 3	7.6
25-Mar	17 - Compressors 4	7.7 – 7.8
27-Mar	18 - Transonic Fan Stage	7.11
30-Mar	Review	
1-Apr	Test #3 - in class	
3-Apr	19 - Turbines	8.1 – 8.3
6-Apr	20 - Turbines 2	8.4 – 8.5
8-Apr	21 - Turbines 3	8.6
10-Apr	22 - Compressor and Turbine matching	8.7
13-Apr	23 - Centrifugal compressors	9.1 – 9.2
15-Apr	24 - Testing and Performance Characteristics	9.5
17-Apr	25 - Rocket Engines	10
20-Apr	Review	
22-Apr	Review	
24-Apr	Reading day	
29-Apr	Final Exam 10 am-12 pm - in class	
6-May	Grades due	

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

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies. Click here to read the university attendance policies:
https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

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.

Assessment Methods and Grading:

1. You are encouraged to work with your classmates in this course, e.g. discussing concepts or approaches to problems. However, the homework papers which you submit must be your own individual work. Copying or comparing final answers is not permitted. The University of Florida honor code is in force for this course.
2. Homework is due in Canvas at the beginning of the period without prior arrangements with the instructor or a written medical excuse. Please submit your solutions ONLY via Canvas. Late assignments will not be accepted. The lowest grade for the HW problems will be dropped.
3. There will be three exams during the semester in class. Exams will emphasize the most recently covered material. The exams will take place during the regular class period and are closed book and phones off. Hand held calculators are allowed. Exam dates are listed below

Important Dates

February 6 Exam 1

March 9 *Exam 2*
April 1 *Exam 3*
April 29 *Final Exam*

Evaluation of Grades

Assignment	Total Points	Percentage of Final Grade
Homework Sets (8)	100 each	25%
Tests	100 each	50%
Final Exam	100	25%
		100%

Grading Policy

Percent	Grade	Grade Points
93.0 - 100	A	4.00
90.0 – 92.9	A-	3.67
87.0 - 89.9	B+	3.33
83.0 - 86.9	B	3.00
80.0 – 82.9	B-	2.67
77.0 - 79.9	C+	2.33
73.0 - 76.9	C	2.00
70.0 – 72.9	C-	1.67
67.0 - 69.9	D+	1.33
63.0 - 66.6	D	1.00
60.0 – 62.9	D-	0.67
0 - 59.9	E	0.00

Academic Policies & Resources
To support consistent and accessible communication of university-wide student resources, instructors must include this link to academic policies and campus resources: https://go.ufl.edu/syllabuspolicies. Instructor-specific guidelines for courses must accommodate these policies.

Commitment to a Positive Learning Environment
The Herbert Wertheim College of Engineering values varied perspectives and lived experiences within our community and is committed to supporting the University's core values.

If you feel like your performance in class is being impacted, please contact your instructor or any of the following:
• Your academic advisor or Undergraduate Coordinator
• HWCOE Human Resources, 352-392-0904, student-support-hr@eng.ufl.edu
• Pam Dickrell, Associate Dean of Student Affairs, 352-392-2177, pld@ufl.edu