

Aerospace Propulsion
MECH 5335 (CRN 13825)
Course Syllabus
Fall 2023

COURSE OBJECTIVES: The goal of this course is to provide the student with a foundation in aerospace propulsion. The objectives are to develop the student's ability to:

- Understand basic principles of various air-breathing and rocket propulsion systems;
- Analyze the performance of aerospace propulsion systems and their components;
- Understand and apply main principles of propulsion system design.

TIME: TR 9:00 am – 10:20 am

LOCATION: BUSS 304

INSTRUCTOR: Dr. Evgeny Shafirovich

E-MAIL: eshafirovich2@utep.edu

If you need to contact me, send me an email from your UTEP account. Do not use MS Teams!

OFFICE: A112

OFFICE HOURS: TR 10:30 am – 11:30 am, 1:30 pm – 2:30 pm

TEXTBOOK

T.A. Ward, *Aerospace Propulsion Systems*, Wiley, 2010, ISBN 978-0-470-82497-9

RECOMMENDED BOOKS

S.D. Heister, W.E. Anderson, T.L. Pourpoint, and R.J. Cassady, *Rocket Propulsion*

P. Hill and C. Peterson, *Mechanics and Thermodynamics of Propulsion*, 2nd ed.

J.D. Mattingly and K.M. Boye, *Elements of Propulsion: Gas Turbines and Rockets*, 2nd ed.

G.P. Sutton and O. Biblarz, *Rocket Propulsion Elements*, 9th ed.

BLACKBOARD: Instructor will use Blackboard for uploading lectures and other materials, updating the syllabus, and communicating with students via announcements and email.

EXAMS: There are two exams (open books and notes).

DESIGN PROJECT: The number of students in the project: one or two. Each project is a conceptual design of a specific aerospace propulsion system, selected by students and approved by the instructor. Students will meet with the instructor regularly to report their progress on the project and discuss further work. Each project will be presented by students to class as two progress reports during the semester and final report at the end of the semester. The final report as a Word document is due at the end of the semester.

GRADING:

Exam 1	25%
Exam 2	25%
Design Project	50%

COURSE CALENDAR

Week	Day	Date	Topic	Assigned Reading
1	T	8/29	Introduction and fundamentals	1.1
1	R	8/31	Fundamentals	1.2 – 1.4
2	T	9/5	Fundamentals	1.5
2	R	9/7	Fundamentals	1.6, 1.7
3	T	9/12	Fundamentals. Review of problems	
3	R	9/14	Review of problems. Project topic assigned.	
4	T	9/19	Rocket engines	2.1, 2.2
4	R	9/21	Rocket engines	2.3
5	T	9/26	Rocket engines	2.4 – 2.10
5	R	9/28	Rocket engines. Review of problems	2.11, 2.12
6	T	10/3	Rocket engines. Review of problems	
6	R	10/5	Rocket engines. Review of problems	
7	T	10/10	Project progress presentations 1	
7	R	10/12	Project progress presentations 1	
8	T	10/17	Exam 1	Chs. 1 and 2
8	R	10/19	<i>Review of Exam 1. Gas turbine engines</i>	4.1 – 4.3
9	T	10/24	Gas turbine engines	4.4 – 4.5
9	R	10/26	Gas turbine engines. Review of problems	4.6
10	T	10/31	Gas turbine engines. Review of problems	4.7, 4.8
10	R	11/2	Gas turbine engines. Review of problems	4.8 – 4.10
11	T	11/7	<i>No class</i>	
11	R	11/9	Ramjet engines	5.1, 5.2
12	T	11/14	Project progress presentations 2	
12	R	11/16	Project progress presentations 2	
13	T	11/21	Ramjet engines	5.2 – 5.4
13	R	11/23	<i>Thanksgiving Day</i>	
14	T	11/28	Exam 2	Chs. 4 and 5
14	R	11/30	<i>Review of Exam 2</i>	
15	T	12/5	Project final presentations. Final report is due.	
15	R	12/7	Project final presentations	

No Final Exam

ACCOMODATIONS POLICY

The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Reasonable accommodations will be made unless it is determined that doing so would cause undue hardship on the University. Students requesting an accommodation based on a disability must register with the [UTEP Center for Accommodations and Support Services \(CASS\)](#). Contact the Center for Accommodations and Support Services at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the [CASS portal](#).

SCHOLASTIC INTEGRITY

Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the Office of Student Conduct and Conflict Resolution (OSCCR) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).