MAE 113
FUNDAMENTALS OF PROPULSION (Winter 2018)

Instructor: Professor Antonio L. Sánchez, als@ucsd.edu
Lectures: Tu & Th 7:30am-9:20am, PCYNH 122
Office Hours: Friday 8:00-9:00 am, EBU II Room 554

Teaching Assistant: Adam Weiss, a2weiss@eng.ucsd.edu
Office hours: Mo 12am-1:00pm (Homework questions), EBU II Room 305
Fr 3pm-4pm (Informal problem session), EBU II Room 105

Course Description: Compressible flow, thermodynamics, and combustion relevant to aircraft and space vehicle propulsion. Analysis and design of components for gas turbines, including turbines, inlets, combustion chambers and nozzles. Fundamentals of rocket propulsion.

Prerequisite by topics: Calculus, elementary physics, thermodynamics, and fluid mechanics. Engineering majors MC 25, MC 27 and MC 28 only and grades of C– or better in MAE 110A or CENG 102 and MAE 101A–B or CENG 101A and 101C (or CENG 103A–B).


Topics Covered:

• The jet propulsion principle. Types of Engines. Performance parameters.
• Ramjets.
• Turbojets.
• Turbofans.
• Turboprops and Turboshafts.
• Typical engine performance. Engine-aircraft matching.
• Rockets

Methods of evaluation:

• The final course grade, based on
  1. HW: Weekly homework assignments (~7 total)
  2. MT1: 1st midterm exam: First day week 6 (2/13/2018)
  3. MT2: 2nd midterm exam: First day week 9 (3/6/2018)
  4. Final exam: 3/22/2018 (place TBA),

is to be computed with the following formula:

Grade=0.1*HW+0.25*MAX(MT1,FINAL) +0.25*MAX(MT2,FINAL)+0.4*FINAL
Course policy and Academic integrity:

5. Homework assignments and solutions will available on the class website:
6. All students are expected to adhere to the UCSD Policy on Integrity of Scholarship. You may discuss homework problems, but must prepare and submit homework reports on your own.
7. Homework must be written clearly and neatly. Homework assignments are to be collected on Tuesdays at the end of the lecture. No late homework will be accepted.
8. Graded assignments are to be collected during TA office hours.
9. Questions regarding your grade on the midterms should be addressed to the TA within 48 hours after the grade is released.
10. There will be no make-up exams (midterms or final). If you anticipate that you will not be able to be present for the midterms or the final, you should drop the class and take it at a later date.
11. You are encouraged to ask questions during the lectures.

IDEA Student Center:

The IDEA Student Center, located just to the right of the lobby of Jacobs Hall, is a hub for student engagement, academic enrichment, personal/professional development, leadership, community involvement, and a respectful learning environment for all. The Center offers a variety of programs, listed in the IDEA Center Facebook page at http://www.facebook.com/ucsdidea/ (you are welcome to Like this page!) and the Center web site at http://idea.ucsd.edu/. The IDEA Learning Center, located in Jacobs Hall Room B805 (basement), offers free tutoring through our Learning Communities program.

Students with disabilities:

Students requesting accommodations for this course due to a disability must provide a current Authorization for Accommodation (AFA) letter issued by the Office for Students with Disabilities (OSD) which is located in University Center 202 behind Center Hall. Students should present their AFA letters to Faculty (please make arrangements to contact me privately) and to the OSD Liaison (Sandra de Sousa - EBU2-Rm.169) in the department at least two weeks prior to an exam to ensure that accommodations may be arranged.

Contact the OSD for further information:
T: 858.534.4382
E: osd@ucsd.edu
W: http://disabilities.ucsd.edu