AE 4660
Aero Propulsion Systems
Syllabus - Fall 2015

Class Schedule
Lecture: MW 4:30-6:10pm, CEAS D0202
Lab: R 11:30am-1:20pm
Office Hours: M 8:30-10:30am, 1:15-2:15pm

Instructor
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Text Book

Course Description
Fundamentals of aeropropulsion systems will be introduced. Thermodynamics and fluid dynamics of aeronautical gas turbine engine components, including inlet, compressors, combustors, and turbines will be described. Analytical and computational techniques assisted by engine runs, will be used to design and determine the component’s efficiencies.

Objectives
- To teach the students the thermodynamics and fluid dynamics of aeronautical gas turbine engine components, including inlet, compressor, combustor and turbine.
- To teach the students the analytical and computational techniques used in the design and the performance evaluation of turbine engine components.
- To apply engine performance evaluation techniques in gas turbine engine runs.

References

Grading
Homework Assignments: 15%
Tests (two): 40%
Final Exam: 20%
Term Paper: 20%
Engine Runs: 5%

Tentative List of Subjects
1. Propulsion system introduction
2. Review of thermodynamics and fluid dynamics principles
3. Quasi-one-dimensional flows
4. Ideal cycle analysis
5. Component performance
6. Elementary of blade aerodynamics
7. Turbine engine sizing
8. Elements of combustion, emission, and noise
9. UAV propulsion

Notes:
(1) No make-up exams will be given for reasons other than documented medical emergencies. In any case, the students must inform the instructor prior to the test. The points for that test will be added to the final exam. If a student misses more than one test, the other test will be graded as zero.
(2) Solve homework problems on engineering paper. Solve one problem on each page. Hand in your paper before the class.
(3) Late homework penalty: 30% for one day late, 60% for two days and no credit for more than two days late. In class, cell phones and other electronic devices alike should be turned off. Non-class-related uses of any PC platforms are discouraged. Use of any electronic device at any time during the exams will be considered cheating.
(4) Students are responsible for making themselves aware of and understanding the University policies and procedures that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. The academic policies addressing Student Rights and Responsibilities can be found in the Undergraduate Catalog at http://catalog.wmich.edu/content.php?catoid=24&navoid=974 and the Graduate Catalog at http://catalog.wmich.edu/content.php?catoid=25&navoid=1030. If there is reason to believe you have been involved in academic dishonesty, you will be referred to the Office of Student Conduct. You will be given the opportunity to review the charge(s) and if you believe you are not responsible, you will have the opportunity for a hearing. You should consult with your instructor if you are uncertain about an issue of academic honesty prior to the submission of an assignment or test. In addition, students are encouraged to access the Code of Honor, as well as resources and general academic policies on such issues as diversity, religious observance, and student disabilities:
   • Office of Student Conduct www.wmich.edu/conduct
   • Division of Student Affairs www.wmich.edu/students/diversity
   • Registrar's Office www.wmich.edu/registrar and www.wmich.edu/registrar/policies/interfaith
   • Disability Services for Students www.wmich.edu/disabilityservices
(5) Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. Please notify the instructor within the first two weeks of the course if you must miss a class, or exam because of a religious observance.
(6) Students and faculty each have responsibility for maintaining an appropriate learning environment. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, color, culture, religion, creed, politics, veterans status, sexual orientation, gender, gender identity and gender expression, age, disability, and nationalities.

This syllabus is subject to change. Check the course website for updates.