ME 6450
Computational Fluid Dynamics II
Syllabus - Spring 2013

Class Schedule
Lecture: T 4:00-7:00 pm, CEAS D206
Office Hours: R 9:00-10:00 am

Instructor
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Course Description
This course introduces the application of numerical methods to the solution of the fluid dynamic
equations. The various forms of the equations of fluid dynamics will be derived and discussed.
The characteristics of the equations will be studied using their one-dimensional analog. The
necessary matrix algebra and eigen-analysis will be reviewed. Modern flux splitting and upwind
differencing will be discussed. Coordinate transformation and grid generation will be introduced.
OpenFOAM will be used for a term project.

References
Computational Fluid Mechanics and Heat Transfer, by J.C. Tannehil, D.A. Anderson and R.H.

Grading
Homework/Quiz: 10%
Test #1: 20%
Final Exam: 20%
Computer Assignments: 50%

Tentative List of Subjects
1. Fluid dynamic equations
2. One-dimensional analog
3. Matrix algebra
4. Numerical solutions of one-dimensional equations
5. Flux splitting, upwind difference, center differencing
6. Coordinate transformation and grid generation
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. All the assignments will be collected and graded. 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.

(4) You are responsible for making yourself aware of and understanding the policies and procedures in the Undergraduate and Graduate Catalogs that pertain to Academic Honesty. These policies include cheating, fabrication, falsification and forgery, multiple submission, plagiarism, complicity and computer misuse. [The policies can be found at http://catalog.wmich.edu under Academic Policies, Student Rights and Responsibilities.] 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). 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.

(5) In class, beepers and cell phones alike should be turned off. Non-class-related uses of any PC platforms are discouraged.