ME3O04 – Fluid Mechanics
Fall 2017

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Course Website:
Go to http://mcmaster.ca/~hamedm/
Click on Courses
Click on ME3O04 course site

- The textbook will be used to assign problems.
- The textbook supplements lectures and class discussions.
- The textbook is not a substitute for lectures.

Important Announcements:
Important announcements will be posted on course website.
It is the student’s responsibility to check the “Important Announcement” section on course website at least once a week.

Downloads
Lecture notes and other material will be posted on the course website in a password protected section. All material is copyright protected and should not be shared with and/or distributed to others.

Assessment: The following distribution of marks will be used, unless there is a valid and compelling reason to use an alternative weighting scheme. Missed tests will have a grade of zero entered without legitimate and documented reason.

Two term tests
40% (20% each) if tutorials attendance is ≥ 90%
45% (22.5% each) if tutorials attendance is < 90%

Assignments
Practicing questions will be assigned every week.

Tutorial attendance bonus
0% for tutorials attendance is < 90%
5% for tutorials attendance is ≥ 90%

Final exam
55%

The weight of any missed work reported using MSAF will be added to the weight of the final examination.
Lectures:

- Laptops, Tables, Cell Phones, and the like are not allowed during lectures and tutorials.
- Class discussions might include points that are not necessarily included in the textbook.
- All exams (two term tests and final) will include questions on theory and concepts covered in lectures and class discussions.
- Assignments might include questions based on lectures and class discussions.
- Attending lectures is very important!

Tutorials

- Tutorials start the week of Sept 11.
- Laptops, cell phones, tables, etc. are not allowed during tutorials.
- If tutorial attendance is ≥ 90%, 5% bonus will be awarded for attendance and the two term tests will be worth 40%.
- If tutorial attendance is < 90%, the two term tests will be worth 45%.
- Tutorials are provided to:-
  1. TAs will solve problems similar to assignment.
  2. Address any unclear points.
  3. Help students solve assignments.

Assignments:

- Roughly, every week, textbook problems and questions based on class discussions will be assigned and posted on the course website. Students are strongly encouraged to solve these problems to prepare for the two term tests and final examination.

Term tests: There will be two, closed book, term tests.

- First term test will be on Thursday October 5 at 7:30 PM. Location will be announced.
- Second term test on Thursday November 9 at 7:30 PM. Location will be announced.
- Students arriving after 20 minutes from the start of the test will not be allowed to write the test.
- An equation sheet will be included with the exam paper, a copy of which will be posted on the web before the tests.
- It is recommended that you write your answer during the term tests in PEN. However, if pencil is used, you will not be able to discuss your mark.

Final Examination: The final exam is a closed-book exam that will cover all lecture material. An equation sheet will be included with the exam paper, a copy of which will be posted on the web before the exam.
Calculator Use: Only McMaster standard calculators can be used in tests.

Laptops, Cell Phones, and Tablets Use: Not allowed during lectures, tutorials, and exams.

Course Objectives:

This course is an introduction to the subject of fluid mechanics. It includes the following topics: fundamental concepts, fluid statics, conservation laws, incompressible inviscid flows, dimensional and similarity analysis, internal incompressible viscous flows, introduction to boundary layers, and lift and drag. While covering the basics and fundamentals of fluid mechanics, the emphasis in this course will be on using those basic principles to analyze various engineering systems.

Course Topics:

1. Introduction and Fundamental Concepts.
2. Fluid Statics.
3. Integral Analysis.
5. Incompressible Inviscid Flow.
6. Dimensional Analysis.

Learning Outcomes: Upon successful completion of the course the student will be expected to have demonstrated the ability to:

1. Understand and use force analysis in static and moving fluids to analyze fluid flow systems.
2. Understands and knows how to apply the various methods of analysis in fluid mechanics (the Reynolds Transport Equation -Control Volume Analysis and differential approach) to solve real-life fluid flow problems.
3. Select and use flow visualization tools (e.g., Streamline, Pathlines, and Streaklines) to analyze and understand the main features of a certain fluid flow.
4. Comprehends the concepts of boundary layer, displacement thickness, and flow separation and be able to use these concepts to simplify the analysis of real flows.
5. Understand the concept of similarity and dimensional analysis and be able to use it to develop and carry out model-prototype analysis.

Graduate Attributes: This course provides the students opportunity to develop the following measures of graduate attributes

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<tr>
<th>Graduate Attributes</th>
<th>Learning</th>
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Posted on Sep. 4, 17 at 7:11 PM
| Knowledge base for Engineering (Indicator 1,3) | 1-6 |

**Policy Reminders:**

“The Faculty of Engineering is concerned with ensuring an Environment that is free of all adverse discrimination. If there is a problem, that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Officer or the Human Rights Consultant, as soon as possible”.

While interaction with your fellow students is expected in learning, assignments and projects submitted for academic credit must be your own work. "Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at [www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf](http://www.mcmaster.ca/policy/Students-AcademicStudies/AcademicIntegrity.pdf)

The following illustrates only three forms of academic dishonesty:

1. Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.
2. Improper collaboration in group work.
3. Copying or using unauthorized aids in tests and examinations.