Physics 2053: Fluids and Thermodynamics (Fall 2016)
T,Th 12:00-12:50, F 13:00-13:50 in C2045

Prerequisites: Math 1001, Physics 1051 (or Physics 1021 with minimum average 70%)

Course description on department web page:
http://www.mun.ca/physics/undergraduates/syllabus/p2053.php

Course web page: on D2L

There are electronic and paper versions of this text available.

Instructor: Dr. Kris Poduska. The best way to reach me is by email: kris@mun.ca.
(Office C3022, Phone 864-8890)

Office Hours: to be announced on D2L

Evaluation:

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worksheets</td>
<td>5%</td>
<td>(in-class, approximately 10 in total)</td>
</tr>
<tr>
<td>Assignments</td>
<td>20%</td>
<td>(a mixture of CAPA and in-class, approximately 10 in total)</td>
</tr>
<tr>
<td>Labs</td>
<td>25%</td>
<td>(details on 2053 Lab D2L shell)</td>
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<tr>
<td>Mid-term test</td>
<td>20%</td>
<td>(Friday, October 21, 2016. 13:00-13:50)</td>
</tr>
<tr>
<td>Final Exam</td>
<td>30%</td>
<td>(date to be announced by MUN Registrar)</td>
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Note: no supplementary exam available

Important general information from the University

As a MUN student, it is your responsibility to acquaint yourself with the following information:

Missed work: Students who cannot complete labs, assignments, or mid-term tests need to consult the University Calendar, Section 6.7.5 Exemptions from Parts of the Evaluation, and speak to the instructor.


6.8.2 Exemptions From Final Exams: http://www.mun.ca/regoff/calendar/sectionNo=REGS-0628

6.12 Academic Misconduct: http://www.mun.ca/regoff/calendar/sectionNo=REGS-0748

Accommodations for Students with Disabilities: http://www.mun.ca/blundon/accommodations/

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Tentative Course Outline *(check D2L for updates)*

Module 1: Fluids [Chapter 15]
- Pressure, variation of pressure with depth
- Buoyancy and Archimedes' principle
- Streamlines, laminar flow and continuity
- Bernoulli's principle
- When flow stops being laminar

Module 2: Temperature, Energy and the First Law [Chapters 16 & 17]
- Temperature and the "Zeroth" Law
- Thermometers and Thermal Expansion
- The ideal gas and the kinetic theory of gases
- Heat and Internal Energy
- Specific heat, latent heat and phase changes
- Thermodynamic work and the "First" Law
- Adiabatic processes
- Equipartition of energy
- Mechanisms of energy transfer

Module 3: Heat Engines, Entropy and the Second Law [Chapter 18]
- Heat Engines and the Second Law
- Reversible and Irreversible Processes
- The Ideal ("Carnot") Engine
- Heat Pumps and Refrigerators
- Entropy and the Second Law