ENG PHYS 2P04
Applied Mechanics
Fall 2019
Course Outline

CALENDAR/COURSE DESCRIPTION
Classical mechanics topics including rocketry, coupled oscillators, elasticity, shear force and bending moment diagrams, tensors, Voigt notation, flexure, and beam resonance. Topics are explored using finite element methods software.
Three lectures, one laboratory (two hours each); first term

PRE-REQUISITES AND ANTI-REQUISITES
Prerequisite(s): PHYSICS 1D03; and credit or registration in MATH 2Z03
Antirequisite(s): ENGINEER 2P04

INSTRUCTOR OFFICE HOURS AND CONTACT INFORMATION
Matt Minnick, minnick@mcmaster.ca, BSB/B106, Extension: 24546

<table>
<thead>
<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30 Office Hour!</td>
<td>Office Hour!</td>
<td>2P04L BSB/106</td>
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<tr>
<td>09:30 Office Hour!</td>
<td>Office Hour!</td>
<td>2P04L BSB/106</td>
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<tr>
<td>10:30 3004 Prep</td>
<td>2P/30 Prep</td>
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<tr>
<td>11:30 3004 BSB/B155</td>
<td>3004T ABB/166</td>
<td>3004 BSB/B155</td>
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<td>2P04 Prep</td>
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<td>12:30 Office Hour!</td>
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<td>13:30 Office Hour!</td>
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<td>Office Hour!</td>
<td>3004 BSB/B155</td>
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<td>14:30 Office Hour!</td>
<td>4A06 BSB/B101</td>
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<tr>
<td>16:30 Office Hour!</td>
<td>4A06 BSB/B101</td>
<td>Office Hour!</td>
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Note: Office hour times are sometimes used by irregular meetings or course deliverables, so you can email me to make sure I’ll be available and/or to reserve any “Office Hour!” time for you or your group (but feel free just drop by!)

TEACHING ASSISTANT OFFICE HOURS AND CONTACT INFORMATION
Phillip Pastolero - pastolpr@mcmaster.ca
Fatemeh Bakshandeh - bakhshaf@mcmaster.ca
Michael Chen - cheny263@mcmaster.ca

COURSE WEBSITE/ALTERNATE METHODS OF COMMUNICATION
The primary method of communication will be
1. Avenue To Learn (ATL, http://avenue.mcmaster.ca/) news postings for announcements - make sure to set your ATL email settings so it emails these to you.
2. Email for individual messages.

COURSE INTENDED LEARNING OUTCOMES
Upon successful completion of the course, you will be able to:

1. Explain a variety of core principles in mechanics, both statics and dynamics
2. Use a computer algebra system (Maple) to solve a variety of physics and math problems
3. Use a FEM solver (FlexPDE) to solve partial differential equations on complex geometries

**MATERIALS AND FEES**

**LAPTOP COMPUTER:**

Students should have a laptop capable of simultaneously running FlexPDE, Maple, and Microsoft Word (windows machines are recommended, price point of $300 or up should be fine). You are required to use this for all tests and the final exam. Contact the course instructor for any concerns!

**OTHER MATERIALS:**

FlexPDE Student Version (free online), Maple (Version 15 or higher), and MS Word (2007 or newer)

**REFERENCE TEXTS:**

-Physics for Scientists and Engineers, Brooks Cole, Serway & Jewett, 978-1133947271 (same as first year)
-Course notes (free on ATL)

**COURSE SCHEDULE**

See ATL for a colour schedule, list of suggested practice problems for each lecture topic, and other useful resources.

**ASSESSMENT**

<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Lab Assignments</td>
<td>22% (2% each)</td>
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<tr>
<td>Lab Tests</td>
<td>44% (4% each)</td>
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<tr>
<td>Lecture Quizzes</td>
<td>Bonus: 2%</td>
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<tr>
<td>Final Exam</td>
<td>34%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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**ADDITIONAL DETAILS REGARDING COURSE MANAGEMENT AND ASSESSMENT**

1. Class attendance mandatory. There is a strong correlation between class attendance and performance in the course.
2. The final exam spans the knowledge of the whole term. Sample exams are provided in ATL.

**ACCREDITATION LEARNING OUTCOMES**
The Learning Outcomes defined in this section are measured for Accreditation purposes only, and will not be taken into consideration in determining a student’s actual grade in the course.

<table>
<thead>
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<th>Outcomes</th>
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<tbody>
<tr>
<td>05.1 - Evaluates and selects appropriate modern tools.</td>
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<tr>
<td>05.2 - Demonstrates an ability to use modern/state of the art tools.</td>
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<tr>
<td>06.1 - Manages time and processes effectively, prioritizing competing demands to achieve personal and team goals and objectives.</td>
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**ACADEMIC INTEGRITY**

You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour 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 types of academic dishonesty please refer to the Academic Integrity Policy, located at [http://www.mcmaster.ca/academicintegrity](http://www.mcmaster.ca/academicintegrity).

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.

**ACADEMIC ACCOMMODATIONS**

Students who require academic accommodation must contact Student accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contact by phone at 905.525.9140 ext. 28652 or e-mail at sas@mcmaster.ca.

For further information, consult McMaster University’s Policy for Academic Accommodation of Students with Disabilities.

**NOTIFICATION OF STUDENT ABSENCES AND SUBMISSION OF REQUEST FOR RELIEF FOR MISSED ACADEMIC WORK**

From [http://mcmaster.ca/msaf/](http://mcmaster.ca/msaf/):

1. This is a self-reporting tool for Undergraduate Students to report absences DUE TO MINOR MEDICAL SITUATIONS that last up to 3 days and provides the ability to request accommodation for any missed academic work. Please note, this tool cannot be used during any final examination period.
2. You may submit a maximum of 1 Academic Work Missed request per term. It is YOUR responsibility to follow up with your Instructor immediately (NORMALLY WITHIN TWO WORKING DAYS) regarding the nature of the accommodation.
3. If you are absent for reasons other than medical reasons, for more than 3 days, or exceed 1 request per term you MUST visit your Associate Dean's Office (Faculty Office). You may be required to provide supporting documentation.

4. This form must be submitted during the period of absence or the following day, and is only valid for academic work missed during this period of absence.

5. It is the prerogative of the instructor of the course to determine the appropriate relief for missed term work in his/her course.

6. You should expect to have academic commitments Monday through Saturday but not on Sunday or statutory holidays. If you require an accommodation to meet a religious obligation or to celebrate an important religious holiday, you may submit the Academic Accommodation for Religious, Indigenous and Spiritual Observances (RISO) Form to the Associate Dean’s Office. You can find all paperwork needed here: http://www.eng.mcmaster.ca/current/documents.html

For Eng Phys 2P04, any MSAF’d material will have its weight moved to the final exam.

**NOTICE REGARDING POSSIBLE COURSE MODIFICATION**

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

**ON-LINE STATEMENT FOR COURSE REQUIRING ONLINE ACCESS OR WORK**

In this course, we will be using Avenue to Learn. Students should be aware that, when they access the electronic components of this course, private information such as first and last names, user names for the McMaster e-mail accounts, and program affiliation may become apparent to all other students in the same course. The available information is dependent on the technology used. Continuation in this course will be deemed consent to this disclosure. If you have any questions or concerns about such disclosure, please discuss this with the course instructor.