

MATH 3050U: MATHEMATICAL MODELLING

Winter 2011, M, 3:40pm-5:00pm, W, 5:40pm-7:00pm, UA 3220

Instructor: Dr. C. Sean Bohun.

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Office Hours: TBD

Text: Mathematical Modelling: A Case Studies Approach by Illner, R., Bohun, C.S., McCollum, S. & van Roode, T.

Title: MATH 3050U Mathematical Modelling (3), Section 001.

Description: This course provides an overview of the mathematical modelling of discrete, continuous and stochastic systems. Problems arising in physics, chemistry, biology, industry, economics, and social science serve as examples to demonstrate model development, implementation, solution and analysis. Methods of solution and physical interpretation of results are stressed. The Maple and Matlab software packages are used to facilitate the modelling process.

Prerequisite: MATH 2010U, MATH 2060U or MATH 2860U, STAT 2010U or STAT 2020U or STAT 2800U.

Examination: In this section the term work consists of midterm exam, **3** assignments and **1** final exam.

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|--------------|------------------------|-----|
| Assignment 1 | Wednesday, February 16 | 10% |
| Assignment 2 | Wednesday, March 23 | 15% |
| Assignment 3 | Wednesday, April 13 | 10% |
| Midterm | Wednesday, February 16 | 25% |
| Final | TBA | 40% |

The midterm exam will be administered in class. The midterm and final exam are “open-book” and “open-notes”. If the student requires special arrangements to be made with the learning centre, the learning centre and the instructor must be notified at least one week prior to the exam date. The final exam will be cumulative.

Grading Policy: The final grades will be assigned as follows:

| | | | |
|----|------------|----|---------------|
| A+ | 90% - 100% | B- | 70% - 72% |
| A | 85% - 89% | C+ | 67% - 69% |
| A- | 80% - 84% | C | 60% - 66% |
| B+ | 77% - 79% | D | 50% - 59% |
| B | 73% - 76% | F | 49% and below |

Academic Honesty: Except for exams and tests, it is assumed that you can discuss problems and assignments among yourselves and with tutors and the professor, so long as what you turn in is your own work. In other words, the discussions are part of the learning process; once you learn how to approach a problem, you are expected to solve it yourself, write up your own submission, and that is what you turn in. It is dishonest to turn in as your own any work which has been copied from the work of someone else.

It is expected that each student enrolled at UOIT will become familiar with this policy and appreciate that academic dishonesty of any form will not be tolerated at UOIT. You are encouraged to carefully read the material in this section and to seek clarification from the appropriate Student Advisor if necessary. Acts of academic dishonesty include, but are not limited to:

CHEATING: Copying answers to exam/quiz questions from another student's exam/quiz paper; copying an out-of-class assignment from another person and submitting it as part of an academic assignment.

FACILITATING ACADEMIC DISHONESTY: Helping or attempting to help another to commit an act of academic dishonesty.

PLAGIARISM: Taking and passing off as one's own the ideas or words of another in any academic assignment.

A student charged with academic misconduct may face academic/or disciplinary sanctions. Read the University Policy on Academic Honesty which is located in Section 5.15 of the UOIT academic calendar <http://www.uoit.ca/calendar>

Term Work: The normal policy in the Faculty of Science for missed term work (tests and assignments) is to re-weight the remaining work to account for the missing grade. There are no make-up exams. If you miss a Science term test or major assignment due to illness or a death in the family you must obtain the appropriate documentation (UOIT Medical Certificate, death certificate), and submit it to the Science Student Advisor within 5 days of missing the test or assignment. If you cannot write a test for any other reason, you must discuss this with the Science Student Advisor and the instructor of the course at least 2 days before you are scheduled to write it. Exceptions to this rule include Varsity Athletics and test conflicts which have different deadlines. If you miss any exam for an invalid reason, you will receive zero for the exam.

IMPORTANT: It is possible that unforeseen circumstances may cause me to alter some of the information in this document. Any such alterations will be announced in class and followed up with a WebCT email message to the students of the class. If you miss any announcement because of inattention or absence from class, then you must accept the consequences of missing it.

| COURSE SCHEDULE | | | |
|-----------------|------------------|-------------|------------------|
| Date | Material covered | Date | Material covered |
| January 10 | Introduction | February 28 | Chapter 4 |
| January 12 | Chapter 1 | March 2 | Chapter 5 |
| January 17 | Chapter 1 | March 7 | Chapter 5 |
| January 19 | Chapter 1 | March 9 | Chapter 5 |
| January 24 | No Class | March 14 | Chapter 5 |
| January 26 | No Class | March 16 | Chapter 6 |
| January 31 | Chapter 2 | March 21 | Chapter 7 |
| February 2 | Chapter 2 | March 23 | Chapter 7 |
| February 7 | Chapter 3 | March 28 | Chapter 8 |
| February 9 | Chapter 3 | March 30 | Chapter 8 |
| February 14 | Chapter 3 | April 4 | Chapter 8 |
| February 16 | Midterm | April 6 | Chapter 9 |
| February 21 | No Class | April 11 | Chapter 9 |
| February 23 | No Class | April 13 | Chapter 9 |