MATH*1160 Syllabus Page (Winter 2020)

Section 01:
Instructor: Marcus Garvie
Class: M/W/Fr: 11:30am - 12:20pm, ROZH 101
Office: MACN 552
Email: mailto:mgarvie@uoguelph.ca
Office Hours: TBA (may change!)

Section 02:
Instructor: Daniel Kraus
Class: M/W: 5:30pm - 6:50pm, ALEX 100
Office: MACN 511
Email: mailto:dkraus@uoguelph.ca
Office Hours: TBA (may change!)

Section 03:
Instructor: Comfort Mintah
Class: M/W/Fr: 3:30pm - 4:20pm, ALEX 100
Office: MACN 535
Email: mailto:cmintah@uoguelph.ca
Office Hours: TBA (may change!)

Prerequisite: 4U Calculus and Vectors or 4U Advanced Functions
Restrictions: ENGG*1500, MATH*2150, MATH*2160
Credit Weight: 0.50
Academic Department: Mathematics & Statistics
Campus: main
Semester Offering: Winter
Teaching Assistants: Announced via email

1 Course Notes:

- **Workbook for this course**: Students must buy the 'fillable' lecture notes for this course at the University Bookstore (cost about $25). This is the same version used in the F19 semester. (No textbook required).
- **Math Preparedness Booklet**: you should work through this booklet during (or before) the first week of class. It is found under the Contents section in Courselink.
- **In-class Discoveries:** these are investigations that we do together in class, and can be found under the Contents section in Courselink.

2 What to bring to class

- The fillable lecture notes that you bought at the University Bookstore.
- Discoveries (see Contents section of Courselink)
- Blank paper, pens/pencils.
- Scientific calculator.

3 Class Schedule:

Found in the Contents section of Courselink.

4 Content Description:

This course provides an introduction to linear algebra in Euclidean space. Topics covered include: N-dimensional vectors, dot product, matrices and matrix operations, systems of linear equations and Gaussian elimination, linear independence, subspaces, basis and dimension, matrix inverse, matrix rank and determinant, eigenvalues, eigenvectors and diagonalization, orthogonalization and projections, linear transformations. Some fundamental proofs and applications of these topics will be included.

5 Learning Outcomes:

- Have a basic understanding of the algebra of matrices
- Understand how linear algebra is needed to work with systems of linear equations
- Be familiar with some applications of linear algebra
- Have a basic understanding of some theoretical linear algebra concepts, including proof.
- Have gained some experience in using computer software to manipulate matrices

6 Homework:

Both the homework problems and solutions are found in the Contents section of Courselink and will (along with class examples) be the basis for the midterm and final exams questions.

7 Tests and exam times:

Exams are based mainly on examples done in class and homework. A minor component (say, up to 15%) may involve MATLAB usage and/or applications.

- 25% Midterm Exam 1: scheduled for Monday, February 10, during & in class
- 25% Midterm Exam 2: scheduled for Monday, March 16, during & in class
- 50% Final Exam (multiple-choice): April 20, 7:00 pm - 9:00 pm, Room TBA

8 Teaching Assistants and Test Corrections

The teaching assistants (TAs) grade the midterms and provide 3 office hours per midterm for corrections and answering questions about grading (schedule announced via email). TAs sign the midterms they grade so you know who graded your midterms. If you have

test corrections please see the TA who graded your test (NOT YOUR PROFESSOR!) to have your test score adjusted. If you find errors in grading and you miss the office hours offered by the TAs then email the TA to schedule an appointment. However, as the TAs are only paid for a limited number of hours, IF YOU MISS THE TA OFFICE HOURS THERE IS NO GUARANTEE THAT A TA WILL BE ABLE TO SEE YOU TO MAKE TEST CORRECTIONS. TEST CORRECTIONS CANNOT BE MADE AFTER THE FINAL EXAM. It is in your best interests to check through your tests in a timely manner with the solutions provided.

9 Picking up midterms

Graded midterms will be placed in 'OUT BOXES' (clearly labelled Math*1160) on the 3rd floor of the MacNaughton Building (south end) with letters indicating the (last) name split.

ONCE THE FINAL EXAMINATION DATE HAS PASSED ALL MIDTERMS WILL BE SHREDDED.

10 The Math & Stats Learning Center:

The Mathematics & Statistics Department operates a drop-in learning center where you'll find a team of tutors that can help you understand and solve problems in Math*1160. The learning center is located on the third floor of the McLaughlin Library in the Science Commons. The hours of operation are as follows:

Monday	Tuesday	Wednesday	Thursday	Friday
9:30-15:30	10:00-16:00	9:30-15:30	10:00-16:00	9:30-14:30

11 Test preparation checklist:

Found in the Contents section of Courselink.

12 Tentative outlines for the midterms and final exam:

Found in the Contents section of Courselink.

13 Solutions to past tests:

Found in the Contents section of Courselink.

14 Tests and solutions for this year (announced when ready)

Found in the Contents section of Courselink.

15 Texts recommended for background reading:

There are MANY books you can consult for background reading. For example:

- The following textbook is recommended: Bernard Kolman & David R. Hill: *Elementary Linear Algebra with Applications*, Pearson/Prentice Hall, 9th Edition, ISBN-13: 978-0-13-229654-0.
- etc., etc.

16 Attendance:

Formal attendance will not be taken. However, we *strongly* encourage you to attend class regularly. IF YOU ARE UNABLE TO ATTEND CLASS IT IS YOUR RESPONSIBILITY TO FIND OUT WHAT YOU MISSED FROM YOUR CLASS MATES. **DON'T EMAIL YOUR INSTRUCTOR ASKING FOR NOTES**.

17 Email Etiquette:

Although we try to respond to all email messages, please don't ask us math questions by email (come & see us instead - don't be shy!); ask for class notes; tell us that you are going to miss a lesson; or generally ask us a question that you can find out for yourself. Keep your messages to the point, polite, and clearly state your question, with name, student ID, and course details.

18 Exam policies:

- All exams are **closed book**. You may not use the textbook, crib sheets, notes, or any other outside material. Do not bring your own scratch paper.
- You are not allowed to use laptop computers or cell phones in the exam. Ordinary scientific (NOT) graphing calculators are permitted in exams.
- The Final Exam is cumulative, i.e., it covers the whole course material.

19 Academic consideration:

- There will be NO MAKE-UP MIDTERM EXAMS. If you miss a Midterm exam due to serious illness of yourself or a death in your immediate family, or due to personal grounds, please contact us by email ASAP explaining the reason for missing the test. You do NOT need to get a doctor's note. If consideration is granted we will readjust the weight of assessed material, as described in the next section. HOWEVER, ONCE YOU HAVE TAKEN AN EXAM NO ACCOMMODATIONS CAN BE GRANTED (it is general University of Guelph procedure to NOT grant accommodations retrospectively). For further details concerning Academic Consideration see https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml
- UNDER NO CIRCUMSTANCES WILL ANY EXAM BE RE-SCHEDULED AT A DIFFERENT TIME AND/OR DATE, with the possible exception of exams taken in SAS.
- Athletes who compete away from the University of Guelph during one of the midterms can arrange for their coach to proctor their exam. Just get your coach to contact us and we will make the arrangements.
- If you miss the final exam due to catastrophic events such as serious illness of yourself or death of your immediate family, you will receive an "Incomplete" grade, then (depending on circumstance determined by an independent committee) you may be allowed to take a deferred exam to receive a letter grade. If you miss the final exam you should (a) inform me by email, and (b) contact your program counsellor for advice.

20 Procedure used to re-adjust the weight of assessed material:

If consideration is given to miss an exam (see item 19 above) the percentage of missed material is moved to the final. Please DO NOT ASK FOR ALTERNATE ARRANGEMENTS AS FOR REASONS OF FAIRNESS TO OTHER STUDENTS IT WILL NOT BE GRANTED:

- **Scenario 1:** Consideration is granted to miss one midterm
  Assessment procedure: the final exam will contribute 75% to your final grade.

- **Scenario 2:** Consideration is granted to miss both midterms (UNLIKELY)
  Assessment procedure: the final exam will contribute 100% to your final grade.

21 Regulations regarding seeing your final exam:

If you wish to see your final exam you must submit your **written** request to the chair of the department by the 5th class day of the new semester, see

https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/sec_d0e7202.shtml

If you are granted permission to see your final exam you will be provided with: (a) your Scantron ('bubble') sheet, (b) a copy of the exam paper, and (c) written solutions. The question booklet with your circled answers is shredded (we only refer to the question booklet if for some reason there is an error on the bubble sheet - see item 22 below).

22 Regulations regarding a grade-reassessment:

If you believe that an error has been made in the determination of your final grade then you must **write** to the chair of the department (by the 10th class day of the new semester) requesting a grade re-assessment. This can lead to the grade staying the same, a grade increase, or a grade decrease. Please note that this should not be used as a means of 'trying to get a few extra marks', but for situations where you have grounds for believing that mistakes have been made in the determination of your final grade. Remember also that your final exam is multiple choice and graded by a computer. Furthermore, THE CHOICES MADE ON THE BUBBLE SHEET TAKES PRECEDENCE OVER THE CHOICES CIRCLED IN THE QUESTION BOOKLET (we only refer to your circled choices in the question booklet if for some reason there is an error on the bubble sheet). For further information see
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

23 Academic Accommodation of Religious Obligations

If you are unable to complete a course requirement due to religious obligations, please let the instructor know within the first two weeks of class. See the academic calendar for more information:
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-accomrelig.shtml

24 Academic Misconduct:

The University of Guelph is committed to upholding the highest standards of academic integrity and it is the responsibility of all members of the University community, faculty, staff, and students to be aware of what constitutes academic misconduct and to do as much as possible to prevent academic offences from occurring. University of Guelph students have the responsibility of abiding by the University's policy on academic misconduct regardless of their location of study; faculty, staff and students have the responsibility of supporting an environment that discourages misconduct. Students need to remain aware that instructors have access to and the right to use electronic and other means of detection. Please note: Whether or not a student intended to commit academic misconduct is not relevant for a finding of guilt. Hurried or careless submission of assignments does not excuse students from responsibility for verifying the academic integrity of their work before submitting it. Students who are in any doubt as to whether an action on their part could be construed as an academic offence should consult with a faculty member or faculty advisor. The Academic Misconduct Policy is detailed in the Undergraduate Calendar:
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml.

25 Accessibility:

The University of Guelph is committed to creating a barrier-free environment. Providing services for students is a shared responsibility among students, faculty and administrators. This relationship is based on respect of individual rights, the dignity of the individual and the University community's shared commitment to an open and supportive learning environment. Students requiring service or accommodation, whether due to an identified, ongoing disability or a short-term disability should contact the Student Accessibilities Services (SAS) as soon as possible. For more information, contact SAS at 519-824-4120 ext. 56208 or email csd@uoguelph.ca or see the website http://www.uoguelph.ca/csd/.

26 Course Policy regarding use of electronic devices and recording of lectures:

Electronic recording of classes is expressly forbidden without consent of the instructor. When recordings are permitted, they are solely for the use of the authorized student and may not be reproduced, or transmitted to others, without the express written consent of the instructor.

27 Drop date:

Students will have until the last day of classes to drop courses without academic penalty. The deadline to drop two-semester courses will be the last day of classes in the second semester. This applies to all students (undergraduate, graduate and diploma) except for Doctor of Veterinary Medicine and Associate Diploma in Veterinary Technology (conventional and alternative delivery) students. The regulations and procedures for course registration are available in their respective Academic Calendars.
Undergraduate Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml

Graduate Calendar - Registration Changes
https://www.uoguelph.ca/registrar/calendars/graduate/current/genreg/genreg-reg-regchg.shtml
Associate Diploma Calendar - Dropping Courses
https://www.uoguelph.ca/registrar/calendars/diploma/current/c08/c08-drop.shtml

28 Course Evaluation Information

Please see
https://mathstat.uoguelph.ca/sites/uoguelph.ca.mathstat/files/public/TeachevaluationformW16_1.pdf.

29 Strike Action

In the unlikely event of strike action by faculty, staff, or TAs that makes it difficult or impossible to administer a midterm examination, the midterm exam will be cancelled and the weight of the midterm examination will be re-distributed to the final exam. If such an event occurs this will be announced in class and an email sent to students via Courselink.

30 Bad weather, or other 'acts of God'

If the university is closed on a day when a midterm is held because of bad weather (e.g. a snow day) then the midterm will be held the next available class day. The same arrangement will hold for any other unavoidable 'acts of God' that make it difficult or impossible to administer a midterm examination (however, see item 29 above).

31 Mental Health Services

One in five students in Canada experiences some sort of mental health issue at some point in their academic career. If you find yourself facing a mental health crisis, or just need to talk to someone, please consider taking advantage of one of the following resources available to University of Guelph students:

- **Counselling Services (x53244)** is located at Health Services (J.T. Powell Building) and offers individual and group counselling sessions by appointment or walk-in.

- **Student Support Network** is located in Raithby House (across from the cannon and offers confidential, peer-based, drop-in support.
- **Good2Talk (1-866-925-5454)** is a free, 24/7 student hotline that provides professional counselling and referrals for mental health, addictions and well-being.

- **Here 24/7 (1-844-437-3247)** specializes in assessment, referral and appointment booking and is available 24/7 for crisis support.

You are not alone and you will not be judged for asking for help.

32 MATLAB Access:

To use MATLAB there are a few options:

- MATLAB is available on the machines in the data resource center of the Library (1st Floor).
- There are machines for individual use (providing a class isn't running) in the New Science block (SCIE 1303, 1305).
- Use your own account at your own department if your department has the MATLAB license.
- Buy a Student Version of MATLAB.
- Install *Octave* system on your own PC, which is free software and emulates MATLAB. Caution: Most likely you can do all the (numerical) homework exercises, but we have not tested all the exercises yet. To download Octave go to https://www.gnu.org/software/octave/download.html

33 MATLAB Tutorials:

For a particularly simple introduction we recommend you work through the 1st tutorial linked from the Contents section of Courselink. There is also a more comprehensive tutorial at the same location. For additional details, the official MATLAB manual is available from http://www.mathworks.com/access/helpdesk/help/helpdesk.shtml.
There are also numerous online MATLAB tutorials.

34 Free open-source textbook:

Found in the Contents section of Courselink. This is a free open-source textbook that I have included for people who wish to do supplementary reading and/or some additional exercises. Please note that this textbook covers much more than is taught in our course.

Please email us if you have any comments or questions!