Department of Mathematics, Faculty of Science

MATH 2130 Engineering Mathematical Analysis 1

A01: Instructor: Michelle Davidson, 340 University Centre

email:Michelle.Davidson@umanitoba.ca

Lecture:208 Armes, Monday, Wednesday, Friday 8:30 – 9:45 AM
Tutorial: 200 Fletcher Argue, Tuesday 11:30 AM – 12:45 PM

A02: Istructor: D.Trim, 306 St. Paul's, 204-255-2740, email: Donald.Trim@umanitoba.ca

Lecture: 223 Wallace, Tuesday and Thursday 8:30 – 9:45 AM
Tutorial: 100 St. Paul's College, Tuesday 11:30 AM – 12:45 PM

Office hours (for Trim):

Monday, Wednesday, Friday 10:30-12:30
Tuesday, Thursday: 9:45-11:20

Pre-requisites: 1210 or 1211, one of 1700, 1710, or 1701

Textbook*: Calculus for Engineers*, fourth edition, Donald Trim, Prentice-Hall

Course Outline:

1. Vector algebra: three-dimensional geometry including lines, planes, and quadric surface; lengths and tangent vectors for space curves (Trim, Chapter 11)
2. Partial derivatives, chain rules, implicit differentiation, directional derivatives, tangent lines and planes, extrema (Trim, Chapter 12)
3. Double and triple integrals applied to area, volume, centres of mass, moments of inertia, fluid pressure (Trim, Chapter 13)

Evaluation:

There will be two term tests counting 50% one on October 8 and the other on November 5 in the tutorial room. Material for which you are responsible on these tests will be announced in class. The better of the two tests will count 60% of the term mark, and the lesser will count 40%. A 3-hour final exam counting for the remaining 50% of the final grade is scheduled by the Registrar's office. The following is the grading table which may be adjusted downward.

Letter Grade	Minimum percentage to guarantee	Final Grade Point
A+	91	4.5
A	80	4.0
B+	75	3.5
B	67	3.0
C+	60	2.5
C	55	2.0
D	50	1.0

Notes:

1. Attendance is an important part of taking this course and students are expected to attend all classes and are responsible for all material presented in class.
2. If you miss a term test, you will be assigned a mark of "zero" unless an acceptable reason is provided including a self-declaration form. In that case, the weight of the term test will be added to the weight of the final exam. A student missing a term test must contact the instructor within 2 days of the scheduled term test (email contact is sufficient).
3. Calculators or other computing devices are not allowed for tests or the final exam.
4. Students should not participate in personal direct electronic messaging or posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook), or online and offline "gaming" during scheduled class time.
5. Learn efficiently, learn to take notes. During the pandemic, may lectures were delivered asynchronously so students had a chance to review lecture videos when they did not catch something during the lecture. Lectures are delivered in-person this term and students will not have the luxury of rewinding a lecture. Therefore, you may want to review some note-taking tips offered by the Academic Learning Centre which can help you learn efficiently.
6. Commitment to Study: In order to be successful in this course, you should aim to commit at least three hours of study for every hour of lectures. Make sure you keep up with studying on a consistent basis.
7. Instructors hold copyright over course materials, presentations and lectures which form part of this course. No audio or videoing recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission. Course materials (both paper and digital) are for student private study and research over the course materials, presentations, and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission.
8. If you are a student with a disability, please contact SAS for academic accommodations. Students who have or think they may have a disability (e.g. learning, medical, hearing, injury-related, visual, mental) should contact SAS to arrange a confidential consultation.

Student Accessibility Services: http://umanitoba.ca/student-supports/accessibility

520 University Centre, 204 474 7423, Student_accessibility@umanitoba.ca

Voluntary Withdrawal Date: November 19, 2024

Academic Integrity

The Department of Mathematics, the Faculty of Science and the University of Manitoba all regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation.
Note: Pagers, PDAs, MP3 units or electronic translators are explicitly unauthorized materials, and must not be present during tests or examinations.

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of "F" in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. Further information about suggested minimum penalties assessed by the Faculty of Science can be found here: https://sci.umanitoba.ca/statement-on-academic-dishonesty/.

All students are advised to familiarize themselves with the **Student Discipline Bylaw**, which is printed in its entirety in the Student Guide; also available online or through the Office of the University Secretariat.

This is what you can expect of me:

- Make every effort to plan the course and each class so that learning is maximized
- Arrive 5 minutes early and begin class at the appointed time
- Conduct classes, but not give lectures. I will explain the difference under my expectations of you.
- Be patient when you struggle with ideas (struggling reveals that learning is taking place)
- Be open to suggestions (they can often lead to improvements in a course)

- Treat you as adult learners, with related respect
- Provide you with plenty of offices hours for consultations. I encourage you to see me as soon as you encounter difficulties. Do not delay.

This is what I expect of you

- Complete all requirements of the course.
- Use university-level, mathematical writing, legible and with correct format. There are many worked examples in the notes and solution manual; these should guide you on how to write solutions to problems on tests.
- Be honest. Tests and examination submissions must be your own work.
- Be punctual to classes and tutorials. The first few moments of a class are the most important. There is often a quick review of the main ideas from the last class and how they lead into the present class. General ideas and the "big picture" are often discussed in the first few minutes. You are doing yourself a disservice by missing these discussions (as well as perhaps disturbing the rest of the class by being tardy).
- Participate in class, which includes both speaking up and listening. Learning begins in class, but most of it takes place when you study. Learning will begin here only if you contribute to the class; what you put into a class is directly related to what you get out. I will ask you many questions during class and for many different reasons. Your learning is substantially enhanced if you offer an answer, or at least formulate one. Do not come to class for the sole purpose of taking notes; that does not contribute to your learning. In order to answer many of the questions that I pose, it is necessary for you to be familiar with what has transpired in recent classes. Try to keep up. Even better is to read ahead. If you pre-read material, you will get far more out of class. Here are the sections from the text, in the order that they will be covered. (11.1,2,5,6,9,10,11; 12.1,2,3,4,5,6,7,8,9,10,11;13.1,2,3,4,5, 6,7,8,9,10,11,12)
- Be courteous while others are speaking. Only one person should be speaking at any given time during class. If you have conversations with your

neighbour while others are discussing course material, I will give you the icy stare. If you continue, I will ask you to leave.

- You can find the lecture videos that I prepared for the course during covid19 at the URL below. Ignore the first video as it contains the course syllabus during the pandemic. These videos should **NOT** be regarded as a replacement for attending classes. You derive much more benefit by attending classes than watching a video. Use the videos as backup material. If you have any difficulty accessing the videos, let me know.

https://youtube.com/playlist?list=PL24XvCfWzGENUgdJ42qMDrdY_5GvEwgCE&si=xK3Oc4iVPhj7drj1

Here is the URL for the tutorials that I produced during covid.

https://youtube.com/playlist?list=PL24XvCfWzGEMxS6pu44gp4r7DV8X1o4dY&si=ebDb-stAeEHA5AGv

The following resources may be of use to you.

Mathematics Academic Resources:

Governing Documents, student rights and responsibilities

A list of University governing documents pertaining to students can be found at http://umanitoba.ca/admin/governance/governing_documents/students/index.html

As a student of the University of Manitoba you have rights and responsibilities. It is important for you to know what you can expect from the University as a student and to understand what the University expects from you. Become familiar with the policies and procedures of the University and the regulations that are specific to your faculty, college or school.

Academic Calendar

http://umanitoba.ca/student/records/academiccalendar.html

Grade appeals

If you have questions about your grades, talk to your instructor. There is a process for term work and final grade appeals. Note that you have the right to access your final examination scripts. See the Registrar's Office website for more information including deadlines related to appeals and the appeal form: http://umanitoba.ca/registrar/

Student Advocacy

Contact Student Advocacy if you want to know more about your rights and responsibilities as a student, have questions about policies and procedures, and/or want support in dealing with academic or discipline concerns. http://umanitoba.ca/student/advocacy/

Science and Technology Library
http://libguides.lib.umanitoba.ca/science_library/sciencesandtechnologylibrary

Health & Mental Health Resources

For 24/7 mental health support, contact the Mobile Crisis Service at 204-940-1781.

Student Counselling Centre

Contact SCC if you are concerned about any aspect of your mental health, including anxiety, stress, or depression, or for help with relationships or other life concerns. SCC offers crisis services as well as individual, couple, and group counselling. Student Counselling Centre:
http://umanitoba.ca/student/counselling/

Student Support Case Management

Contact the Student Support Case Management team if you are concerned about yourself or another student and don't know where to turn. SSCM helps connect students with on and off campus resources, provides safety planning, and offers other supports, including consultation, educational workshops, and referral to the STATIS threat assessment team. http://umanitoba.ca/student/case-manager/

University Health Service

Contact UHS for any medical concerns, including mental health problems. UHS offers a full range of medical services to students, including psychiatric consultation. http://umanitoba.ca/student/health/

Health and Wellness

Contact a Health and Wellness Educator if you are interested in information on a broad range of health topics, including physical and mental health concerns, alcohol and substance use harms, and sexual assault. http://umanitoba.ca/student/health-wellness/

Comprehensive Information

For comprehensive information about the full range of health and wellness resources available on campus, visit the Live Well @ UofM site: http://umanitoba.ca/student/livewell/

Department of Copyright and Intellectual Property Resources

Copyrights and intellectual property must be respected by all students. For more information, visit http://umanitoba.ca/copyright/

https://umanitoba.ca/admin/governance/governing_documents/community/235.html

Academic Integrity Resources

The Faculty of Science takes academic integrity very seriously. Any evidence of academic dishonesty on assignments, labs and/or tests will be forwarded to the appropriate authorities for potential disciplinary actions. Information from the Faculty of Science regarding Academic Integrity can be found at https://sci.umanitoba.ca/students/undergraduate-students/current-undergrads/

See also:

http://umanitoba.ca/student-supports/academic-supports/academic-integrity

The University Student Discipline By-Law may be accessed at: http://umanitoba.ca/admin/governance/governing_documents/students/student_discipline.html.

Respectful Behaviour Resources

Students are expected to act in a respectful manner. Policies regarding respectful work and learning environment and sexual assault can be found here: http://umanitoba.ca/admin/governance/governing_documents/community/230.html

Violent or Threatening Behaviour
http://umanitoba.ca/admin/governance/governing_documents/community/669.html

If you experience Sexual Assault or know a member of the University community who has, it is important to know there is a policy that provides information about the supports available to those who disclose and outlines a process for reporting. The Sexual Assault policy may be found at: http://umanitoba.ca/admin/governance/governing_documents/community/230.html

More information and resources can be found by reviewing the Sexual Assault site: http://umanitoba.ca/student/sexual-assault/

Final Examinations, Grades and Grade Appeals Resources

Information from the Faculty of Science regarding Exams and Appeals can be found at: https://sci.umanitoba.ca/students/undergraduate-students/exams-and-appeals/

Final examination and grades policies at the University can be found here: http://umanitoba.ca/admin/governance/governing_documents/academic/1299.html

Students intending to appeal their term work grade can do so through the Registrar's office. A fee is charged for each appeal. More information can be found here: http://umanitoba.ca/student/records/grades/690.html

To view your final examination, please check with the department offering the course for policies. To appeal your final grade, you can initiate the process at the Registrar's office. A fee will be charged for each appeal. See the Registrar's office for more information: http://umanitoba.ca/student/records/