

BIT 1101 A - Fall 2021

Mathematics II for IMD

Instructor: Gary Peter Bazdell

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Email: gbazdell@math.carleton.ca

Office hours: By email appointment

Feedback: Please tell me what you think about my teaching at RateMyProfessor.com

References: A first Course in Linear Algebra by Robert A. Beezer. Free book at <http://linear.ups.edu/>.

Prerequisites: Restricted to students in the B.I.T. degree program.

Delivery Method: The course will run asynchronously for the most part. Lecture materials for the course will be uploaded to the Brightspace page on a regular basis. Live classes may be scheduled from time to time but will always be recorded. Tutorials will be used for extra practice and to further work on topics covered in lectures.

Course Description: Tailored for students in the Interactive MultiMedia Design program, this course covers systems of linear equations, vector space of n-tuples, subspaces and bases, matrix transformations, kernel, range, matrix algebra and determinants, inner products and orthogonality, eigenvalues, diagonalization and applications.

Classes: Tuesday and Thursday at 11:35AM - 12:55 PM.

Classes begin: September 9th, 2021.

Classes end: December 10, 2021.

Tutorials: Begin on or after September 17th. Friday at 13:35 PM -14:25 PM.

Withdrawals with fee adjustment: September 30th.

Evaluation Summary

Evaluation Components

30% 2 online tests (2 hours each): 15% + 15%

35% 7 assignments: 5% each

35% Final Examination (3 hours online)

Assignments

There will be seven assignments and will be due at the end of tutorials. Assignments must be submitted electronically in pdf format (please familiarize yourself with scanning apps, such as CamScanner). Assignments will **NOT** be acceptable after the due date for any reason.

Midterm Tests

There will be two 120 minutes online tests on: Oct 14 and Nov 11. Tests will be open for 24 hours (beginning after the tutorial) and you'll choose the 2-hour period within this time frame for when you write them. The material covered on each test will be announced one week before the test.

Final Examination

This is a 3-hour exam scheduled by the University. The exam is taking place during the period of December 11 to 23 (including Saturday and Sundays). It is each student's responsibility to be available at the time of the examination. In particular, no travel plans should be made until the examination schedule is published. It is each student responsibility to find out the correct date and time of the exam. After the exam is written, the students are allowed to see their exam papers up until three weeks after the exam date. This examination review is for the educational purpose only and NOT for negotiation of the grade with the instructor. Please remember that we do not change grades on the basis of students' needs (such as scholarships, etc.).

University Policies

Student Academic Responsibilities

Each student is responsible for:

- Knowing the due dates of in-tutorial marked problem sets and tests.
- Maintaining a folder of all work done in the course during the semester for validation claims in cases of disagreement with faculty.
- Keeping both paper and electronic copies of all assignments, marked and unmarked, in case papers are lost or go missing.
- Regularly checking both Brightspace announcements as well as one's Carleton e-mail account for important messages from both professor and university administration
- Participating in tutorial exercises and activities as required.

Class Conduct

To ensure an optimum-learning environment, students are expected to behave in a professional manner at all times. Disrupting a class is considered to be an Instructional Offence (see University Calendar). If a student exhibits disruptive behavior in class and chooses not to refrain from such behavior at the request of the instructor, the student will be asked to leave the class. The student's behavior will be reported to Campus Security and the Office of the Associate Dean of Student Affairs.

Student Academic Integrity Policy

Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties, which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

E-Proctoring

Please note that tests and examinations in this course will use a remote proctoring service provided by Scheduling and Examination Services. You can find more information at <https://carleton.ca/ses/e-proctoring/>.

Plagiarism

As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". The office of the Dean of Science will review such reported offences.

Unauthorized Co-operation or Collaboration

Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

Academic Accommodations for Students with Disabilities

The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your *Letter of Accommodation* at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (*if applicable*). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website (www.carleton.ca/pmc) for the deadline to request accommodations for the formally scheduled exam (*if applicable*).

Academic Accommodation

To be worked out on individual basis with instructor. Consult Equity Services Website or an Equity Advisor, ext. 5622, for Policy and list of Holy Days (www.carleton.ca/equity). For Pregnancy Contact Equity Services (ext. 5622) to obtain letters of accommodation

Student with Religious Obligations

1. As soon as you receive your course syllabus, identify any potential conflicts between your religious obligations and course requirements.

NOTE: Contact Equity Services if you are unclear if your religious observance requires accommodation under the Policy

2. Make a formal written request to your instructor indicating the nature of the religious obligation and suggest possible alternative dates and/or means of satisfying the academic requirements.

NOTE: Such request should be made during the first two weeks of the term, or as soon as possible after a need for accommodation is known to exist, but in no case later than the second last week of classes for that term. Even if you are unclear as to the exact date of the obligation (e.g., when waiting for a moon sighting) you are still expected to notify your instructor of the potential conflict and explore accommodation options.

3. If your request for accommodation is denied you may contact Equity Services and request assistance in an informal review of the decision.

http://www.carleton.ca/equity/accommodation/student_guide.htm

Medical Certificate

The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to <http://www.carleton.ca/registrar/forms>.

Tentative Weekly Schedule

Week	Date	Topics
1	September 9	Introduction to the course, systems of linear equations.
2	September 14 September 16	Gaussian elimination and Gauss-Jordan elimination. Solution sets of linear equations.
3	September 21 September 23	Geometric vectors, algebraic vectors, vector operations, dot and cross product. \mathbb{R}^n , vector spaces, subspaces, matrix vector space.
4	September 28 September 30	Linear combinations, spanning sets and linear independence, bases, and dimensions.
5	October 5 October 7	Linear transformations, null spaces, ranges, matrix representations of a linear transformation, composition.
6	October 12 October 14	The inverse of a matrix, invertible matrix theorem, rank of a matrix and systems of linear equations.
7	October 19 October 21	Coordinates and change of basis, the determinant of a matrix, properties of determinants.
8	October 26 October 28	Winter Break Winter Break
9	November 2 November 4	Cramer's Rule, eigenvalues and eigenvectors.
10	November 9 November 11	Diagonalization, linear transformations and orthogonal matrices.
11	November 16 November 18	Orthogonal bases and Gram-Schmidt process, scaling transformations, rotation transformation.
12	November 23 November 25	Homogeneous coordinates, four-dimensional transformations, points, directions, geometrical interpretation of x-coordinate.
13	November 30 December 2	Transforming normal vectors. Quaternions.
14	December 7 December 9	Review.

Please treat the above as a guide only as it may vary considerably from what transpires!