

MATH 2R03: LINEAR ALGEBRA II

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Office Hours: We 18:30—21:30, plus varying on Tu, Fr	

Text: Elementary Linear Algebra, by Howard Anton, Wiley.

Time / Location: Core: Tu Th 19:00—22:00 ABB / 102

Course Description: This is a continuation of the Linear Algebra I course. Topics covered include linear transformations, inner product spaces, diagonalizability, and various applications.

Evaluation:

MARKING SCHEME:

The following percentages determine your final grade:

Exam I:	40%
Exam II:	40%
Assignments:	20%

DESCRIPTION OF EVALUATION CRITERIA:

Exams: Two exams will be given during the term. The final exam will take place on the evening of the final day, and will be 3 hours in duration. The first exam will be approximately two hours in duration, but this can be adjusted to be longer if the majority of the class desires more time.

If you are unable to attend an exam, please file the appropriate paperwork with the dean to avoid penalty.

The questions on the exam will vary in difficulty. The categories of difficulty are “Easy,” “Medium,” “Difficult,” and “Challenging.” This rating is somewhat subjective, but hopefully appropriate.

Assignments: Five assignments will be given throughout the semester, each one with approximately fifteen (15) questions. The assignments will be distributed on ELM, and a due date and time will be given. Typically there is one assignment due each Tuesday, with the exception of the first Tuesday. Please submit assignments right at the beginning of class time. Assignments turned in after this begin to receive a penalty which increases depending on how late the assignment is.

You are encouraged to collaborate with each other as much as you find helpful. Using another's work to complete an assignment is not considered cheating, but you should work carefully to be sure to be prepared for upcoming exams and to know the material.

LETTER GRADE SCALE:

This is the marking scale used at McMaster University:

Grade:	12 Grade Points:	Points on 100% Scale
A+	12	100—90
A	11	89—85
A-	10	84—80
B+	9	79—77
B	8	76—73
B-	7	72—70
C+	6	69—67
C	5	66—63
C-	4	62—60
D+	3	59—57
D	2	56—53
D-	1	52—50
F	0	49—0

Partial Credit: Part marks will be given for showing work that deviates slightly from a correct solution or a substantial part of work that deviates only slightly from that part of the correct solution. Irrelevant steps or work that demonstrates no knowledge of the subject will not be awarded any credit.

Schedule:

The schedule below is tentative. It will be adjusted as necessary to accommodate the needs of the class. We can add or change topics and pace as desired. The date Aug 3 is labeled as 'Extra Time' for topics that can't be fit in earlier, but more adjustments to the schedule are likely.

Dates:	Topics:
June 22, 24	Review, 6.1: Inner Products, 6.2: Cauchy—Schwarz, 6.3: Gram—Schmidt, 6.5: Change of Basis, 6.6: Orthogonal Matrices
June 29	Coding Theory, Ch. 7: Eigenvalues and Diagonalization
July 6, 8	Ch 8: Linear Transformations, Kernel, Range, Inverse Transformations, Similarity, Isomorphism
July 13, 15	Application: Hydrogen Atom, Midterm 1
July 20, 22	9.2, 9.4: Fourier Series, 9.5&9.6: Quadratic Forms, 9.9: LU Decompositions, Ch. 10: Complex Vector Spaces
July 27, 29	11.6: Markov Chains, 11.7: Graph Theory, 11.8: Games, 11.11: Computer Graphics, 11.14&11.15: Chaos and Fractals, 11.16: Cryptography; Other Applications
Aug 3, 5	Extra Time, Final Exam

The dates for the exams are:

Exam 1: July 15

Exam 2: Aug 5

Correspondence:

You can either correspond with me through the e-mail system provided with ELM or through email at the top of this outline. This is probably the easiest way for me to communicate with you.

At times, my responses may be terse. Please do not view this as my regarding your e-mail as unimportant. At times, to facilitate answering questions concerning the material for the course, I will provide the class with the question asked (rephrased) as well as the answer, so that everyone will be able to see it. If you don't feel comfortable with this, please let me know.

This system is only for course material which I anticipate that other students will be asking about. If you mention anything of a personal nature to me through e-mail, be assured that I will not share this information with the class, even under anonymous conditions. If you don't trust my judgment or if you want to be careful, include the word "PERSONAL" in your subject.

Please allow ample time for me to receive and reply to your message. Remember that I first have to get your message and you might be at the end of a long line of e-mails to which I must reply. A large part of the reason why

you will have a long time to look at an assignment or to prepare for a test is to have the opportunity to ask questions and for me to have enough time to reply to you. Please try to avoid saving your questions until the morning of a test or the moments just before an assignment is due.

Whether you attend class or not, you are responsible for knowing whatever is said in class, including course material and announcements. Also, any time that a message is posted or an email is sent, I will assume that you have read it within 24 hours of the posting of that message.

Mistakes:

As humans, we all make mistakes. I will probably make some in class during our seven weeks together, and I both apologize for them in advance and ask that you make me aware of them as soon as possible. When I make a mistake, I want the class to know what the correct statement is, so that as much confusion as possible can be avoided.

Also, I know that even the best students who have a perfect understanding of the material are going to make careless mistakes occasionally. I don't want a tiny arithmetic error on a test to inflict substantial damage on your grade, so I will conduct the marking so that such mistakes will "even out."

Academic Dishonesty:

The minimum penalty for academic dishonesty is a grade of 0 on an exam. Academic dishonesty includes, but is not limited to: copying off another student's paper during an exam, sharing answers to an exam with another student, creating "cheat sheets," hacking into an email account or breaking into the office in the math building to obtain a copy of an exam before it is photocopied, and consulting the textbook or notes during an exam. Hopefully it is obvious that these are things that you should not do. The full Academic Integrity Policy can be found at:

<http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf>

I should emphasize that for this course, collaborating with other students on assignments is NOT considered a form of cheating. I actually encourage you to discuss the assignments with each other as much as possible, using the Discussion and Chat elements of ELM, if you wish.

Extra Credit:

I am open to the possibility of an opportunity for extra marks, if the class desires this. I will poll the class and modify this section of the outline as necessary. This opportunity would be more than just an additional assignment, and it would have educational value for those willing to put the time into it. Please ask me if you are interested.

Disabilities and Religious Holidays:

If you have a learning disability and need special accommodations for testing, or if a religious holiday somehow prevents you from attending an exam or completing an assignment, please notify me or another appropriate person within the first week of class. Accommodations can then be made in time.

Revisions:

The version of the course outline posted during the first days of class will be modified to include the extra information available and to accommodate the mathematical desires of the class.

At any time, I reserve the right to revise this course outline as necessary. Ample notice will be given of any serious revisions which may be time-sensitive. I will give you notice of any revisions.