DEPARTMENT OF MATHEMATICAL AND COMPUTATIONAL SCIENCES UNIVERSITY OF TORONTO MISSISSAUGA

MAT247H5F LEC0101 Algebra II Course Outline - Fall 2019

Class Location & Time Tue, 05:00 PM - 07:00 PM IB 200

Thu, 05:00 PM - 06:00 PM IB 200

Instructor Jaimal Thind

Office Location
Office Hours

E-mail Address jaimie.thind@utoronto.ca
Course Web Site https://q.utoronto.ca

Teaching Assistant Ahmed Ellithy

E-mail Address ahmed.ellithy@mail.utoronto.ca

Course Description

Continuation of MAT240H5. A theoretical approach to real and complex inner product spaces, isometries, orthogonal and unitary matrices and transformations. The adjoint. Hermitian and symmetric transformations. Spectral theorem for symmetric and normal transformations. Polar representation theorem. Primary decomposition theorem. Rational and Jordan canonical forms. Additional topics including dual spaces, quotient spaces, bilinear forms, quadratic surfaces, multilinear algebra. [36L, 12T]

Prerequisite: MAT240H5/MAT240H1

Exclusion: MAT247H1 (SCI) Distribution Requirement: SCI

Students who lack a pre/co-requisite can be removed at any time unless they have received an explicit waiver from the department. The waiver form can be downloaded from here.

Textbooks and Other Materials

The required text is *Linear Algebra*, *Fourth Edition*, by Friedberg, Insel, Spence. You likely have the book already, since it is the same book used for MAT 240. If you do not, you may also wish to shop around online for used copies.

I also recommend the book *Linear Algebra Done Right*, by Axler, which is available in digital format via the U of T library system (http://search.library.utoronto.ca/details?9939760)

Assessment and Deadlines

Type	Description	Due Date	Weight
Class Participation		On-going	5%
Presentations		On-going	10%
Assignment	10 written assignments (10%), 11 reading assignments (5%)	On-going	15%
Term Test		2019-10-22	20%
Final Exam		TBA	50%
		Total	l 100%

More Details for Assessment and Deadlines

Homework:

There will be 10 (ten) assignments. Each assignment will be worth 1% of our final grade. The assignments will be posted in the

"Assignments" section of the course page. You must submit your assignment <u>at the beginning of class on the day that it's due</u>. There will be no extensions, or make-up assignments given.

Every week there will be a reading assignment, to be completed before attending class on Thursday. Thursday's class will involve groupwork based on the reading.

Presentations:

Every week we will have students present solutions to the HW. Everyone is expected to be prepared to present solutions to any of the HW problems on the relevant assignment.

Your presentation grade will be computed as follows: Each successful presentation is worth a maximum of 3 points. You should aim to have the most points possible by the end of the term. The student with the 3rd highest total for the course sets the benchmark for what is considered a 100%. (I.e. if the 3rd highest points total is 30, then 30 points gives you 10/10 for your presentation grade. The maximum grade for the presentation component is 10/10.)

To ensure that every student has the opportunity to achieve an "A" grade in tutorial, students with the lowest points total will be given priority to present first each week. Your instructor may call on you to present, especially if you have not presented in a while.

During presentations you should be paying attention, trying to understand the solution being presented and asking any questions you have of the speaker to make sure that you understand what's been said, and that what's been said is correct. This is to be done politely and respectfully. Students who show a lack of respect to their peers will be asked to leave. If you are asked to leave more than once you will receive a presentation grade of 0/10.

After a presentation we will discuss the problem, the presented solution, alternate solutions, and other relevant aspects of the material. You may be called upon during this discussion to provide your own opinions/ideas/voice to the class. We encourage everyone to take part in the discussions, and to create a positive learning environment for all students. In particular, try to make sure you are contributing as much as possible, without dominating the discussion and space.

Test:

There will be one term test, in class on Tuesday, October 22. There will be no make up test. If you miss the test for a valid reason, documentation should be brought to me within one week of the missed test.

Penalties for Lateness

Late assignments are not accepted.

Procedures and Rules

Missed Term Work

To request special consideration, bring supporting documentation to the instructor in person during office hours at least one week in advance.

In case of illness, bring a U of T medical certificate to the instructor within one week of the missed work. The certificate must specify the exact period during which you were unable to carry out your academic work.

Missed Final Exam

Students who cannot write a final examination due to illness or other serious causes must file an<u>online petition</u> within 72 hours of the missed examination. Original supporting documentation must also be submitted to the Office of the Registrar within 72 hours of the missed exam. Late petitions will NOT be considered. If illness is cited as the reason for a deferred exam request, a U of T Verification of Student Illness or Injury Form must show that you were examined and diagnosed at the time of illness and on the date of the exam, or by the day after at the latest. Students must also record their absence on ACORN on the day of the missed exam or by the day after at the latest. Upon approval of a deferred exam request, a non-refundable fee of \$70 is required for each examination approved.

Academic Integrity

Honesty and fairness are fundamental to the University of Toronto's mission. Plagiarism is a form of academic fraud and is treated very seriously. The work that you submit must be your own and cannot contain anyone elses work or ideas without proper attribution. You are expected to read the handout How not to plagiarize (http://www.writing.utoronto.ca/advice/using-sources/how-not-to-plagiarize) and to be familiar with the Code of behaviour on academic matters, which is linked from the UTM calendar under the link Codes and policies.

Final Exam Information

Duration: 3 hours Aids Permitted: None

Additional Information

Please read the syllabus on the course page carefully. It contains more information about the structure of the course this year, as well as the learning objectives and goals for the course, and how our course structure aims to help you acheive the objectives for the course.

Last Date to drop course from Academic Record and GPA is November 7, 2019.