Course Outline Form: Winter 2016

General Information

Course Title: MATH*3160 Linear Algebra II

Course Description: The topics covered will include a selection from complex vector spaces, algebra of linear operators, matrix representations of operators, polynomial theory, characteristic values, annihilating polynomials, invariant subspaces, direct sum decompositions, Cayley-Hamilton Theorem, diagonalizable operators, Primary Decomposition Theorem, Jordan canonical form of a matrix, unitary matrices, and the Spectral Theorem for normal operators.

Credit Weight: 0.50

Academic Department: Mathematics & Statistics

Campus: University of Guelph

Semester Offering: Winter 2016

Class Schedule and Location: MWF 230pm-320pm, MCKN 228

Instructor Information

Instructor Name: David Kribs
Instructor Email: dkribs@uoguelph.ca
Office location and office hours: W 330pm-430pm MACN 546, and M F informally after class

GTA Information

GTA Name: George Hutchinson
GTA Email: hutchins@alumni.uoguelph.ca
GTA office hours and location: To Be Announced, MACN 536

Course Content

Specific Learning Outcomes: Linear and matrix algebra are subjects that emerged in the early 1900's as a mathematical foundation for quantum mechanics. Over the past century the topics have blossomed in all sorts of directions, so that linear algebra now touches on every area of modern science. The intent of this course is to give a deeper theoretical introduction to linear algebra. Primarily this is accomplished through an analysis of the theory of linear operators on complex vector spaces. The topics are presented with a view to develop and enhance the student's ability to appreciate and understand abstract mathematical concepts and proofs. This

course provides the necessary preparation and background for advanced courses such as functional analysis and linear statistical models, as well as the basic linear algebra found in many other scientific disciplines.

Lecture Content: The topics covered will include a selection from complex vector spaces, algebra of linear operators, matrix representations of operators, polynomial theory, characteristic values, annihilating polynomials, invariant subspaces, direct sum decompositions, Cayley-Hamilton Theorem, diagonalizable operators, Primary Decomposition Theorem, Jordan canonical form of a matrix, unitary matrices, and the Spectral Theorem for normal operators.

Course Assignments and Tests:

Course evaluation will be comprised of:

4 Assignments (40% total; IN (194) & OUT (195) boxes in library)

Midterm Exam (20%; Held during class on Wednesday, March 2)

Final Exam (40%)

Final examination date and time:

Thursday, April 21 from 830am to 1030am, Room TBA.

Course Resources

Required Text:

K. Hoffman, R. Kunze, *"Linear Algebra, second edition,"* Prentice-Hall, Inc., Toronto, 1971. (Copy on 2 hour reserve in Library)

Other Resources:

D.W. Kribs, S. Plosker, *MATH*3160 Supplemental Course Notes*, 2015, available online through the Library.

Course Policies

Grading Policies

http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-grds.shtml

Course Policy on Group Work:

You are encouraged to discuss and collaborate on assigned problems. However, you must write up your solutions in your own words.

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.

University Policies

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

Academic Consideration

When you find yourself unable to meet an in-course requirement because of illness or compassionate reasons, please advise the course instructor in writing, with your name, id#, and e-mail contact. See the academic calendar for information on regulations and procedures for Academic Consideration:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-ac.shtml

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:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-amisconduct.shtml

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/

Course Evaluation Information

Please see http://www.mathstat.uoguelph.ca/files/TeachevaluationformF10.pdf

Drop date

The last date to drop one-semester courses, without academic penalty, is ***Friday*, March 11, 2016**. For regulations and procedures for Dropping Courses, see the Academic Calendar:
http://www.uoguelph.ca/registrar/calendars/undergraduate/current/c08/c08-drop.shtml