COURSE INFORMATION

MATH 2070 WA: Applied Analysis II

WINTER 2024

Lectures: TTh 11:30 AM – 1:00 PM   Location: UC 0050

Lab: F   3:30 PM – 4:30 PM   Location: UC 0050

Instructor: Dr. Christopher Chlebovec
           Office: RB 2007
           Office Hours: W 11:30 AM – 12:30 PM or by appointment

Email: cchlebov@lakeheadu.ca (the best way to contact me!)

Course Site

This course has an online D2L site, which you access through MyInfo, via *mycourselink*. All information with regards to this course can be found on D2L and should be checked regularly. Class notes and other information will be posted on D2L periodically. Class notes are used concurrently with the lectures and will benefit you if printed and read prior to class.

Textbook (Optional)

- Advanced Engineering Mathematics, 6 th Edition by D.G. Zill and W.S. Wright (Chapters 7 and 8)

- Essentials of Probability and Statistics for Engineers and Scientists 1st editions Walpole, Myers, Myers, Ye (Selected topics from Chapters 1-7)

Course Description

The first half of the course will consist of topics from linear algebra and the second half of the course will consist of topics from probability and statistics.

Linear Algebra:

- Vectors (three dimensional coordinate system, vectors, the dot product, the cross product, equations of lines and planes, vector spaces, Gram-Schmidt orthogonalization process)
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- Matrices (matrix algebra, system of linear equations, rank of a matrix, determinants, inverse of a matrix, eigenvalues, power of matrices, orthogonal matrices, diagonalization)

Probability and Statistics:

- Organization and Description of Data (frequency distributions, stem-and-leaf displays, descriptive measures, quartiles and percentiles, mean and variance)

- Introduction to Probability (sample spaces and events, counting, probability, axioms of probability, elementary theorems, conditional probability, Bayes' Theorem)

- Probability Distributions (discrete random variables, binomial, hypergeometric, Poisson, and geometric distribution)

- Probability Densities (continuous random variables, uniform and exponential distribution)
- Inferences Concerning a Mean (point and interval estimation, estimating population means, hypothesis testing)

- Regression Analysis (Simple linear regression, correlation)
    *Extra topics may be added, if time permits.

Class Policies

Attendance is not mandatory; however, it is strongly recommended that you attend. If you come to class, I would appreciate that you show up on time. Please turn off your phone while in class. Quizzes and exams must be taken on the date assigned. You are allowed to use one of the following non-programmable calculators during quizzes and exams (see https://www.lakeheadu.ca/programs/departments/software-engineering/programs/ug/calculator-policy):

- Casio FX-991-MS
- Sharp EL-546-XB-WH
- Texas Instruments TI-30Xa
- Texas Instruments TI-30X IIS

Books, cell phones, or other aids are not allowed during the quizzes and exams. Cell phones or other electronic devices are not allowed to be on your person during quizzes and exams, per university policy.

Labs

The lab will also be used to facilitate your understanding of the material and it will be beneficial to attend. Concepts will be reinforced through explanations and examples.

Accommodations

Lakehead University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you think you may need accommodations, you are strongly encouraged to contact Student Accessibility Services (SAS) and register as early as possible. For more information, please visit: http://studentaccessibility.lakeheadu.ca

Evaluation

A. Assignments (10 %)

Assignments will be given throughout the term and will be posted on D2L under the assignments tab. An announcement will be given about the due date and you will be given one week to complete each of the assignments given.

Some important information:

- Drop-off location: MATH 2070 assignment box on the second floor of the Ryan Building (Electronic copies will not be accepted).

- Must include your name and student ID, the course number and section, and the assignment number. Please include a title page that includes this information.

- Must be stapled together. Failure to do so will result in a deduction of marks.

- **Late assignments will not be accepted.**

- Copying of assignments will result in a mark of 0 for both assignments as well as possible further disciplinary action.

B. Quiz I (10%)

Quiz I is tentatively scheduled on **Friday, February 9** during the lab time and will cover topics from linear algebra.

C. Exam I – Midterm Exam (35%)

The midterm is scheduled on **Friday, March 1** during lab time and will cover topics from linear algebra.

D. Quiz II (10%)

Quiz II is tentatively scheduled for **Friday, March 22** during the lab time and will cover topics from probability and statistics.

E. Exam II – Final Exam (35%)

The final exam will be a two-hour exam and will cover topics from probability and statistics. The date of the exam will be provided as soon as it is scheduled.

Important Dates

First Day of Classes: Monday, January 8, 2024

Final Date to Register (Add): Friday, January 19, 2024

Winter Study Week: February 19, 2024 – February 23, 2024

Final Date for Withdrawal (Drop): Friday, March 8, 2024

Good Friday: Friday, March 29, 2024 (no classes)

Easter Monday: Monday, April 1, 2024 (no classes)

Final Day of Classes: Tuesday, April 9, 2024 (Apr 8 and Apr 9 make up days)

Examination Period: April 12 – 22, 2024 (11 days)

Examination Contingency Date: April 23, 2024