

Math 2070

Applied Analysis II

(2019 Winter)

Instructor: [Dr. Wendy Huang](#)

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Course Website: <http://whuang1.lakeheadu.ca/2070.htm>

Lectures:

MWF: 2:30 – 3:30 PM (UC 2011)

Labs:

Fridays: 1:30 – 2:30 (AT 2001)

Office Hours: Thursdays: 2:00 – 3:00 PM, RB 2007.

Email Communication: Any time. When sending email regarding the course, include course number, your name, and keywords in the subject line. For example, "Subject: Math 2070, John Smith, formula for standard deviation". (Otherwise, your message will not be opened.)

Course Description:

The first part of the course is an introduction to matrix algebra. Solutions of simultaneous equations. Gaussian elimination. Vector and matrix notation. Determinations. Linear independence. Eigenvalues and diagonalization. The second part of the course is an introduction to probability and statistics. Simple ways of analyzing data. Concept of probability. Discrete and continuous probability. Point and interval estimation. Significance tests. Regression and correlation analysis.

Textbooks:

1. *Advanced Engineering Mathematics, 5th Edition* by D.G. Zill and W.S. Wright (Chapters 7 and 8)
2. *Miller & Freund's Probability and Statistics for Engineers, 9th Edition* by R.A. Johnson. (Selected topics from Chapters 2 – 11)

Performance Evaluation:

Assignments	20%
Exam 1 (Feb. 25)	30%
Exam 2	50%

Lectures:

1. Students are expected to attend all lectures, prepared. Preparation includes preview the course materials according to the course schedule.
2. Students are fully responsible for any missed information including announcements due to the absence of lectures.
3. Private discussions and/or conversations are not permitted during lecture time.
4. Cell phones are to be turned off during lecture time.

Labs/Office hours: Lab/office hours will be used for questions and answers, come to visit my office if you have questions regarding to the course.

Assignments:

1. Assignments (and due dates) will be posted on the course website.
2. To submit your assignments, drop them in the labeled assignment box at the 2nd floor hallway of Ryan Building before 11:59 PM on the due date.
3. Solutions of the assignments will be available online after the due date.

4. Late assignments will **NOT** be marked under any circumstance. The lowest mark of the assignments will be automatically dropped in calculating the final mark of the course.
5. Students are expected to do their assignments independently. Plagiarism will be disciplined according to the university regulations.

Exams: There will be a midterm (1 hour) and a final exam (2 hours). Both are close-book. Students are allowed to bring 1 page (letter size, both sides) of personal study notes and a non-programmable calculator. Related tables, when needed, will be provided.

Lecture Schedule (Subject to Change):

Week	Content
1 (Jan. 7 - 11)	Vectors in 2 and 3-spaces (Sec. 7.1-2) Dot Product (Sec. 7.3) Cross Product (Sec. 7.4)
2 (Jan. 14 - 18)	Lines and Planes (Sec. 7.5) Vector space (Sec. 7.6) Matrix algebra (Sec. 8.1)
3 (Jan. 21 - 25)	System of equations (Sec. 8.2) Rank of a matrix (Sec. 8.3) Determinants (Sec. 8.4-5)
4 (Jan. 28 - Feb. 1)	Inverse of a matrix (Sec. 8.6) Cramer's rule (Sec. 8.7) Eigenvalues (Sec. 8.8)
5 (Feb. 4 - 8)	Power of matrix (Sec. 8.9) Orthogonal Matrix (Sec. 8.10) Diagonalization (Sec. 8.12)
6 (Feb. 11 - 15)	LU-Factorization (Sec. 8.13) Introduction of Statistics (Sec. 1.6) Tables and graphs (Sec. 2.1-4)
	Study Break
7 (Feb. 25 - Mar.1)	Exam 1: Matrix Algebra (Feb. 25) Descriptive measures (Sec. 2.5-7)
8 (Mar. 4 - 8)	Probability (Sec. 3.1-5) Conditional Probability (Sec. 3.6-7)
9 (Mar. 11 - 15)	Discrete RVs (Sec. 4.1-3) Normal distribution (Sec. 5.1-3) Sample distribution (Ch. 6.1-4)
10 (Mar. 18 - 22)	Estimation (Sec. 7.1-3) Tests of Hypothesis (Sec. 7.5-7)
11 (Mar. 25 - 29)	Compare two treatments (Ch. 8.2-4) Inferences concerning variances (Sec. 9.1-3)
12 (April 1 - 5)	Regression (Sec. 11.1-4) Correlation (Sec. 11.6)
	Exam 2: Probability and Statistics