The University of Western Ontario
London Canada
Statistical Science 2503B
Advanced Mathematics for Statistics
Course Outline - Winter 2019

Instructor: Khoa Nguyen, (519) 661-2111 x88799, MC 282, knguyen@uwo.ca

Office Hours: Thursday, 2:00pm-3:00pm, MC282; or by appointment

Lectures: 1:30pm-2:30pm Mon, Wed, Fri SEB 2200

Textbook: *Differential Equations with Boundary Value Problems,* 2nd Edition by John Polking, Albert Boggess, and David Arnold, Pearson (ISBN: 9780134689500).

Website: Log into UWO Owl (https://owl.uwo.ca) for individual grades, upcoming quizzes and important announcements. Students are expected to check UWO Owl regularly.

Material: This course will consist of two parts. The first part (approximately eight weeks) is twofold, differential equations and their counterparts, difference equations. It will constitute an introduction to first-order ordinary differential equations (ODEs) and related topics, with emphasis placed on applications. Specific topics include linear and separable differential equations, qualitative analysis and stability, modeling deterministic systems (in particular population growth and savings/investment), and linear systems of ODEs. We will also discuss second-order ODEs, Laplace transforms and moment generating functions. Simultaneously, the theory of difference equations and their applications are also illustrated. The second part of the course (approximately four weeks) will constitute an introduction to discrete-time Markov chains. Specific topics include the Chapman-Kolmogorov equations, classification of states, stationary distributions and ergodic theorems. If time is permitted, continuous-time Markov chains and the Poisson process will be discussed.

Evaluation: Students will be evaluated on the basis of four quizzes and a final exam. All material covered up to the end of the course will be considered testable on the final exam.
Quizzes 40%.

Final Examination (April exam period) 60%.

Quizzes: There will be four equally weighted quizzes (in class). Quiz 1: Jan 25, Quiz 2: Feb 8, Quiz 3: Mar 8 and Quiz 4: Mar 22

Missed Evaluations: If you have a conflict, please contact me with appropriate written documentation, if at all possible prior to the evaluation. There will be no make-up quizzes, but if adequate documentation is received, the course quiz grade of the missing quiz will be pro-rated.

Addendum to all Applied Mathematics Course Outlines:
If you are unable to meet a course requirement due to illness or other serious circumstances, you must provide valid medical or other supporting documentation to your faculty's Dean's Office as soon as possible and contact your instructor immediately. It is the student's responsibility to make alternative arrangements with their instructor once the accommodation has been approved and the instructor has been informed. In the event of a missed final exam, a "Recommendation of Special Examination" form must be obtained from your faculty's Dean's Office immediately. For further information please log in to: http://student.uwo.ca/

A student requiring academic accommodation due to illness, should use the Student Medical Certificate when visiting an off-campus medical facility or request a Records Release Form (located in the Dean's Office) for visits to Student Health Services.

Accessibility Statement: Please contact the course instructor if you require material in an alternate format or if you require any other arrangements to make this course more accessible to you. You may also wish to contact Services for Students with Disabilities (SSD) at 661-2111 x 82147 for any specific question regarding an accommodation.

Mental Health Statement: Student who is in emotional/mental distress should refer to Mental Health@ Western http://www.uwo.ca/uwocom/mentalhealth/ for a complete list of options about how to obtain help.

Other: Consult http://www.stats.uwo.ca/ugstudies/mutual.htm for the Department of Statistical and Actuarial Science's mutual expectations of students and instructors, which will apply for this course.