

**The University of Western Ontario London**  
**Ontario** **Canada**

**Department of Applied Mathematics**

**APPLIED MATHEMATICS 2270A**

**Course Outline 2019**

**Instructors:**

Dr. Khoa Nguyen [**Course Coordinator**](Office MC 282) Section 001 Monday, Wednesday, Friday: 8:30am -9:30 MC-110, [knguyen@uwo.ca](mailto:knguyen@uwo.ca)

Dr. A.B. MacIsaac (Office MC 285) Section 002 Monday, Wednesday, Friday: 8:30am -9:30am SSC-2050, [allanb@uwo.ca](mailto:allanb@uwo.ca)

Dr. Khoa Nguyen (Office MC 282) Section 003 Monday, Wednesday, Friday: 9:30am -10:30 MSC-110, [knguyen@uwo.ca](mailto:knguyen@uwo.ca)

**Tutorials:**

004 Friday 12:30 PM 1:30 PM FNB-1250

005 Friday 12:30 PM 1:30 PM FNB-1240

006 Friday 10:30 AM 11:30 AM FNB-3210

008 Monday 11:30 AM 12:30 PM FNB-1250

009 Monday 10:30 AM 11:30 AM FNB-1240

011 Monday 11:30 AM 12:30 PM FNB-3210

012 Friday 10:30 AM 11:30 AM FNB-1240

Office Hours: TBD by Course Instructors

**Text:**

**Advanced Engineering Mathematics**, 6th edition, Zill (required), ISBN 978-1-284-10590-2

**Course Description:**

This (half) course is designed to provide all second year engineering students with an introduction to the field of differential equations, with special emphasis on methods and applications that are most useful in the engineering sciences. Topics include first order differential equations of various types, higher order differential equations and methods of solving them, initial and boundary value problems, applications to mass-spring systems and electric RLC

circuits, Laplace transform and its use for solving differential equations, systems of linear differential equations, orthogonal functions and Fourier series.

### **Learning Outcomes**

By the end of the course the student will be able to

- Solve first order linear and non-linear differential equations.
- Solve second order or higher order linear differential equations.
- Solve linear order differential equations with constant coefficients with initial condition(s) by using Laplace transform.
- Construct a physical/engineering problem in the language of differential equations and solve it.
- Solve a system of differential equations by using Laplace transform.
- Define orthogonal functions and compute their inner product.
- Express a periodic function by using Fourier series.

### **Method of Evaluation:**

45% quizzes Q1: Sept 30th and Oct 4th Q2: Oct 28th and Nov 1st Q3: Nov 25th and 29th (50 minutes each during Tutorial Sessions. Multiple Choice and Long Answer)

55% Final Exam (TBD) (3 hours Multiple Choice and Long Answer)

### **Attendance:**

Attendance is not mandatory but highly recommended. All material in the lecture up to the end of the course can be considered testable. In addition, extra material covered in lectures can be tested in quizzes, tests and exams.

### **Missing Quizzes or Exams:**

Missing an exam or quiz will result a grade of zero for that exam or quiz except when permission is granted from Engineering Student Services. If permission is granted, a prorated mark will be assigned based on the overall performance. There will be no make up for quizzes.

### **Registration in Tutorials:**

Quizzes will be written during Tutorial session. Students will not receive credit for writing quizzes in tutorial sections in which they are not registered.

### **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 supporting documentation to the Academic Counselling Office of your home faculty as soon as possible. If you are a Science student, the Academic Counselling Office of the Faculty of Science is located in NCB 280, and can be contacted at

[scibmsac@uwo.ca](mailto:scibmsac@uwo.ca). For further information, please consult the university's medical illness policy at

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_medical.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_medical.pdf)

If you miss the Final Exam, please contact your faculty's Academic Counselling Office as soon as you are able to do so. They will assess your eligibility to write the Special Exam (the name given by the university to a makeup Final Exam). You may also be eligible to write the Special Exam if you are in a "Multiple Exam Situation" at the following website:

[http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)

Please contact the course instructor if you require lecture or printed material in an alternate format or if any other arrangements can make this course more accessible to you. You may also wish to contact Student Accessibility Services (SAS) at 661-2147 if you have any questions regarding accommodations.

The policy on Accommodation for Students with Disabilities can be found here:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_disabilities.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_disabilities.pdf)

The website for **Registrarial Services** is <http://www.registrar.uwo.ca>

The policy on Accommodation for Religious Holidays can be found here:

[http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/accommodation\\_religious.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

Learning-skills counsellors at the Student Development Centre (<http://www.sdc.uwo.ca>) are ready to help you improve your learning skills. They offer presentations on strategies for improving time management, multiple-choice exam preparation/writing, textbook reading, and more. Individual support is offered throughout the Fall/Winter terms in the drop-in Learning Help Centre, and year-round through individual counselling.

Students who are in emotional/mental distress should refer to Mental Health@Western ([http://www.health.uwo.ca/mental\\_health](http://www.health.uwo.ca/mental_health)) for a complete list of options about how to obtain help. Additional student-run support services are offered by the USC, for more information, visit <http://westernusc.ca/services>.