



The University of Western Ontario

London Ontario Canada

Department of Applied Mathematics

APPLIED MATHEMATICS 2270B

Course Outline Winter 2021

Instructor:

Dr. K. Nguyen (Office MC 282)

Lectures: Monday, Wednesday, Friday: 8:30AM-9:30AM (via ZOOM)

Because the lectures are synchronously recorded, students are encouraged to participate these lectures.

Tutorial: 002 Monday: 11:30AM-12:30 PM (via ZOOM)

Office Hours:

Nguyen: Thursday: 1:00pm- 2:00pm (via ZOOM)

Website: Information and announcements relevant to all sections will be posted on OWL at **APPLMATH 2270B 001 FW20**. Students should check OWL on a regular basis.

Students must use their Westernm (@uwo.ca) email addresses when contacting their instructors.

Textbook:

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.

Objectives:

After this course, a student can

- Solve a first order differential equation by several methods.
- Solve a second linear differential equation, homogeneous or inhomogeneous by several methods.
- Solve a system of ordinary linear differential equations by using Laplace transform.
- Solve some typical integral equations or differential-integral equations.
- Apply the knowledge of differential equations to solve several problems in engineering such as RLC circuits, resonance, harmonic oscillations.
- Represent a periodic function by Fourier series.

Method of Evaluation:

Assignments: 30%

Midterm: 32%

Final Exam: 38%

Assignments: Students do their assignments in Webwork. These assignments require to access the following website:

<https://webwork1.stats.uwo.ca/webwork2/AM2270B-2021/>

There are 5 assignments.

Assignment 1: released January 22-due January 28, 2021.

Assignment 2: released February 5-due February 11

Assignment 3: released March 12-due March 18

Assignment 4: released March 26-due April 4

Assignment 5: released April 5-due April 12

Examinations: Since exams are conducted by Proctortrack, a student must have the following technical conditions satisfied

- Stable internet connection
- Working microphone
- Working webcam
- Working laptop or computer

Exams in this course will be conducted using a remote proctoring service, Proctortrack. By taking this course, you are consenting to the use of this software and acknowledge that you will be required to provide **personal information** (including some biometric data) and the session will be **recorded**.

If you have questions related to Proctortrack, please access the following link:

<https://ecampusontario.pressbooks.pub/proctortrack/>

And the Remote Proctoring at Western website at

<https://remoteproctorin.uwo.ca>

Notes:

- The Midterm Examination will be scheduled for Friday, February 26, 2021, 11am – 2:00 pm. Specific details on the exam will be posted online closer to the exam date.
- The final examination will be 3 hours and will be cumulative. It will be scheduled by the Registrar’s Office and will be held during the examination period.
- The exams are closed book and closed notes and are conducted by Proctortrack. No calculators or any electronic devices are allowed during the exams.
- All material in the lectures up to the end of the course can be considered testable. In addition, extra material covered in lectures can be tested in exams.

Missing Assignments or Exams:

Missing an exam or assignment will result a grade of zero for that exam or assignment except when permission is granted from Engineering Student Services. If permission is granted, a prorated mark will be assigned. There will be one makeup for the midterm and final exams.

Addendum to all Applied Mathematics Course Outlines:

(SUBJECT TO REVISION FOR 2021)

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

If you miss the Final Exam, please contact your faculty's Academic Counseling 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" (see 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/appeal/accommodation_disabilities.pdf

The policy on Accommodation for Religious Holidays can be found here:http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf

Learning-skills counselors 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 counseling.

Students who are in emotional/mental distress should refer to Mental Health@Western (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, <http://westernusc.ca/services>.

Statements concerning Online Etiquette

Some components of this course will involve online interactions. To ensure the best experience for both you and your classmates, please honour the following rules of etiquette:

- please "arrive" to class/tutorials on time
- please use your computer and/or laptop if possible (as opposed to a cell phone or tablet)

- ensure that you are in a private location to protect the confidentiality of discussions in the event that a class discussion deals with sensitive or personal material
- to minimize background noise, kindly mute your microphone for the entire class until you are invited to speak, unless directed otherwise
- In order to give us optimum bandwidth and web quality, please turn off your video camera for the entire class unless you are invited to speak
- please be prepared to turn your video camera off at the instructor's request if the internet connection becomes unstable
- unless invited by your instructor, do **not** share your screen in the meeting

The course instructor/TA will act as moderator for the class and will deal with any questions from participants. To participate please consider the following:

- if you wish to speak, use the “raise hand” function and wait for the instructor to acknowledge you before beginning your comment or question
- remember to unmute your microphone and turn on your video camera before speaking
- self-identify when speaking.
- remember to mute your mic and turn off your video camera after speaking (unless directed otherwise)

General considerations of “netiquette”:

- Keep in mind the different cultural and linguistic backgrounds of the other students in the course.
- Be courteous toward the instructor, your colleagues, and authors whose work you are discussing.
- Be respectful of the diversity of viewpoints that you will encounter in the class and in your readings. The exchange of diverse ideas and opinions is part of the scholarly environment. “Flaming” is never appropriate.
- Be professional and scholarly in all online postings. Cite the ideas of others appropriately.

Note that disruptive behaviour of any type during online classes, including inappropriate use of the chat function, is unacceptable. Students found guilty of Zoom-bombing a class or of other serious online offenses may be subject to disciplinary measures under the Code of Student Conduct.

Examination conflicts

A student with examinations having flexible submission times (e.g., where one or more examination is a take-home examination) cannot request alternative arrangements unless a conflict cannot be avoided by rescheduling writing the exam to a different time within the window specified by the instructor. This applies to direct conflicts as well as “heavy load” conflicts (e.g., three exams within a 23-hour period). The

student should discuss any concerns about a potential conflict and/or request accommodation with their academic counselling unit prior to the deadline to drop a course without academic penalty.

In the case of online examinations, an “Examination Conflict Room,” which may be assigned when a student is scheduled to write two proctored exams concurrently, will be interpreted as arrangements for continuous proctoring.

Resources

- For OWL support and other technical support, contact the WTS Helpdesk. [WTS HelpDesk](#):
- [Health and Wellness Support](#): Western has many resources dedicated to supporting remote learners. This includes
- Student Experience has a variety of resources to help you navigate life as an online learner! [Student Experience](#):