

Western University  
London, Canada  
Departments of Applied Mathematics and Mathematics

## **Applied Mathematics 3415A – Advanced Applied Mathematics for Electrical Engineering**

**Fall 2019**

**INSTRUCTOR:** Bogdan Tudose, Department of Applied Mathematics.  
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### **Basic Course Information**

**Class times:** M W F 11:30am – 12:30pm in SEB 2200.

### Req. Texts

**Advanced Engineering Mathematics**, 6th edition, Dennis G. Zill (Jones and Bartlett).

**Antirequisite(s):** Applied Mathematics 3413A/B.

**Prerequisite(s):** Applied Mathematics 2270A/B and 2276A/B.

Unless you have either the requisites for this course or written special permission from your Dean to enroll in it, you may be removed from this course and it will be deleted from your record. This decision may not be appealed. You will receive no adjustment to your fees in the event that you are dropped from a course for failing to have the necessary prerequisites.

## **Course Syllabus**

### Description

Topics Include: introduction to complex analysis; complex integration; boundary value problems; separation of variables; Fourier series and transform methods of solution for PDE's, applications to electrical engineering.

### Expectations

By the end of the course, students should be able to:

- apply calculus concepts to complex functions of a complex variable using the concept of analyticity, the Riemann- Cauchy equations and perform contour integrals in the complex plane.
- use separation of variables and Fourier series to solve boundary value problems for PDE's including the heat, wave and Laplace equations.
- Students are expected to have read the appropriate sections from the textbook and to have completed practice problems recommended in class.

- Students should note that success in university-level mathematics courses requires self-directed exploration of topics.
- Students are expected to use help resources available to them when problems arise. It is often better to tackle difficult material when problems with understanding occur. Putting off questions until exam time is an ill-advised study strategy. Students that work at a consistent pace throughout the term and make a consistent effort to understand material tend to achieve better results.

## Evaluation

Your final grade will be calculated as follows:

<b>Midterm Exam</b>	<b>30 %</b>
<b>Final Exam</b>	<b>50 %</b>
<b>Quizzes</b>	<b>20 %</b>

### Midterm Exam

At the mid term you will write a two-hour exam-style test. Date and location TBA.

### Final Examination

The Final Examination will be three hours and will be cumulative. The date, time and location of the final exam will be announced by the Registrar's Office. Students seeking a make-up exam for any reason must secure approval from the appropriate dean (see addenda).

### Quizzes

There will be 4 quizzes administered in class, dates TBA.

All quizzes and exams will be closed book, no calculators allowed.

## Accommodation and Accessibility

If you are unable to meet a course requirement due to illness or other serious circumstances, you must seek approval for the absence as soon as possible. Approval can be granted either through a self-reporting of absence or via the Dean's Office/Academic Counselling unit of your Home Faculty. 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.

For further information, please consult the university's policy on academic consideration for student absences:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic\\_Consideration\\_for\\_absences.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Consideration_for_absences.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" (see [http://www.registrar.uwo.ca/examinations/exam\\_schedule.html](http://www.registrar.uwo.ca/examinations/exam_schedule.html)).

## Academic Policies

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

In accordance with policy, <http://www.uwo.ca/its/identity/activatenonstudent.html>, the centrally administered e-mail account provided to students will be considered the individual's official university e-mail address. It is the responsibility of the account holder to ensure that e-mail received from the University at his/her official university address is attended to in a timely manner.

**No electronic devices will be permitted during any quizzes or exams in this course.**

Scholastic offences are taken seriously and students are directed to read the appropriate policy, specifically, the definition of what constitutes a Scholastic Offence, at the following Web site: [http://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

## **Support Services**

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: [https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/Academic%20Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic%20Accommodation_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](http://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_religious.pdf)

[optional] 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, <http://westernusc.ca/services>.