

THE UNIVERSITY OF WESTERN ONTARIO  
London Ontario  
Department of Applied Mathematics

**AM 3413a/3415a Applied Mathematics for Engineers  
(Electrical and Mechanical)  
Emergency Remote Teaching\* Version**

\*Official terminology: this remote learning approach is imposed on the university by external circumstances.

Fall 2020

Lectures Released Online MWF

Instructor: Professor C. Essex, essex@uwo.ca, MC 270

1. **Primary Course Contacts:**

Mahmood Mazarei, mmazare@uwo.ca

Gianfranco Bino, gbino@uwo.ca

2. **Calendar Description and Prerequisites:**

<https://www.westerncalendar.uwo.ca/Courses.cfm?Subject=APPLMATH&SelectedCalendar=Live&ArchiveID=>

3. **Content:** An introduction to Partial Differential Equations (PDEs) with the essentials of functions complex variables. The specific topics include: Sturm-Liouville Theory, General Orthogonal Series Expansions, Boundary Value Problems, Integral Transforms and PDE's, Functions of a Complex Variable, Poles, Series, and Residues, Conformal Mapping.

4. **Goals:** To be able to understand and execute problems concerning partial differential equations and complex analysis for engineering purposes, enhanced through team work and team learning.

**Text:** *Advanced Engineering Mathematics*, D.G. Zill, and W.S. Wright, Sixth edition, Jones & Bartlett Learning, ISBN: 978-1-4496-9172-1. ]

5. **Evaluation:**

1. 50% 3-4 Competitive team assignment sets (Mechanical vs Electrical)
2. 50% Final (non-team) (Dec 2020, TBA):

6. **Strategy:**

- (a) *Pacing and asynchronous lectures:* Recorded lectures will be posted on OWL three times a week: Monday, Wednesday, and Friday. The aim is to simulate explicitly a pacing for new material, as one might naturally acquire implicitly from regular classes. It sends a signal that should not be ignored as to the rate at which you must progress in order to do well by the end of term. These lectures are called "asynchronous" because you have the discretion to view them at any time nonetheless. DO NOT IMAGINE THAT YOU CAN WATCH ALL OF THEM IN ONE SITTING! The asynchronous lectures are under the personal copyright of the instructor, and may only be used for the purposes of these courses in Fall 2020.
- (b) *Homework:* Problems from the text will only be assigned in the asynchronous lectures posted on OWL, and nowhere else. These will be a key part of the final exam material.
- (c) *Competitive assignment sets:* 3 to 4 separate competitive assignment sets will be done through OWL. These define the term mark. They will be evaluated in terms of individual competence directly and community competence at deploying resources to get best results indirectly. Although problem sets will be scored directly for individuals, competitive bonus points will be assessed for best team performance. There are two teams: Electrical and Mechanical. While these assignments can be done in one sitting they typically will be slotted to last 5 to 7 days, to allow for flexibility and the opportunity to communicate.
- (d) *Final:* In contrast, the final examination will evaluate individual knowledge and ability, **without** collaboration. Details will appear as needed in OWL announcements.
- (e) *Advice and Assistance:* OWL forums, email and Zoom will be experimented with. We will seek feedback as to which approach performs best. More will be forthcoming in OWL announcements.

7. **Greater Powers:** They desire the following information be added as an aid. It is not meant to be comprehensive.

- (a) *Plagiarism:* Students must write their essays and assignments in their own words. Whenever students take an idea, or a passage from another author, they must acknowledge their debt both by using quotation marks where appropriate and by proper referencing such as footnotes or citations. Plagiarism is a major academic offence (see Scholastic Offence Policy in the Western (Academic Calendar)).
- (b) *Plagiarism Checking:* The University of Western Ontario uses software for plagiarism checking. Students may be required to submit their written work and programs in electronic form for plagiarism checking.
- (c) *Prerequisites for a course:* Unless you have either the requisites for this course or written special permission from your Dean to enrol in it, you will 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.
- (d) *If computer-marked multiple-choice tests and/or exams are given:* Use may be made of software to check for unusual coincidences in answer patterns that may indicate cheating.
- (e) *If you are unable to meet a course requirement due to illness or other serious circumstances:* Academic Consideration for Student Absence Students will have up to two (2) opportunities during the regular academic year to use an on-line portal to self-report an absence during the semester, provided the following conditions are met: the absence is no more than 48 hours in duration, and the assessment for which consideration is being sought is worth 30% or less of the student's final grade. Students are expected to contact their instructors within 24 hours of the end of the period of the self-reported absence, unless noted on the syllabus. Students are not able to use the self-reporting option in the following circumstances:

for exams scheduled by the Office of the Registrar (e.g., December and April exams)

absence of a duration greater than 48 hours,

assessments worth more than 30% of the student's final grade,

if a student has already used the self-reporting portal twice during the academic year

If the conditions for a Self-Reported Absence are not met, students will need to provide a Student Medical Certificate if the absence is medical, or provide appropriate documentation if there are compassionate grounds for the absence in question. Students are encouraged to contact their Faculty academic counselling office to obtain more information about the relevant documentation.

Students should also note that individual instructors are not permitted to receive documentation directly from a student, whether in support of an application for consideration on medical grounds, or for other reasons. All documentation required for absences that are not covered by the Self-Reported Absence Policy must be submitted to the Academic Counselling office of a student's Home Faculty.

For policy on Academic Consideration for Student Absences - Undergraduate Students in First Entry Programs, see:

[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)

and for the Student Medical Certificate (SMC), see:

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