

AM3815A—Partial Differential Equations I

September-December 2021

Instructor: Xingfu Zou

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Office Hours: time and format TBD

Lecture (001): Mon-Wed-Fri, 1:30-2:30pm; **in-person at room FNB-3210**

- **Classes begin:** Sep. 8, 2021; Reading Week: Nov. 1-7, 2021; Classes end: Dec. 8, 2021)
- **Contingency plan for an in-person class pivoting to 100% online learning:** In the event of a COVID-19 resurgence during the course that necessitates the course delivery moving away from face-to-face interaction, all remaining course content will be delivered entirely online, either synchronously (i.e., at the times indicated in the timetable) or asynchronously (e.g., posted on OWL for students to view at their convenience). The grading scheme will not change. Any remaining assessments will also be conducted online as determined by the course instructor.

Prerequisite: (i) Mathematics 1600A/B; Applied Mathematics 2402A; Calculus 2303A/B or Calculus 2503A/B; or (ii) Calculus 2402A/B and Statistical Sciences 2503A/B. In each of the above courses, a minimum mark of 60% is required.

— 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.

Textbook: *J. David Logan, Applied Partial Differential Equations, 3rd edition, Springer 2015*

— (i) This is the same text used last year for this course and it is available for free as an e-book from Western Libraries. (ii) Some materials not included in this text may be added to the course (so, skipping classes may result in disadvantageous consequences).

Course Topics: Boundary value problems for Laplace, heat, and wave equations; derivation of equations; separation of variables; Fourier series; Sturm-Liouville Theory; eigenfunction expansions; cylindrical and spherical problems; Fourier and Laplace transforms.

Course Materials:

- Students are responsible for checking the course OWL site (<http://owl.uwo.ca>) on a regular basis for news and updates. This is the primary method by which information will be disseminated to all students in the class.
- All course material will be posted to OWL: <http://owl.uwo.ca>

- If students need assistance with the course OWL site, they can seek support on the OWL Help page. Alternatively, they can contact the Western Technology Services Helpdesk. They can be contacted by phone at 519-661-3800 or ext. 83800.

Course Evaluation: Assignments: (15%); Midterm exam (35%); Final exam (50%):

- 1) The main purpose of **assignments** is to push you to digest the course materials by doing exercises. Thus, the assignments are only given a very small percentage (15 %) toward the final grade. Problems will be assigned, and completed assignments will be collected and marked *partially and selectively only though*. Due times for handing in assignments will be strictly followed. Copying other people's assignments is now allowed; and if an copying is identified, penalty will be implemented.
- 2) **Midterm exam** will be on Monday, October 25 at 7:00-9:00pm, and the room(s) will be announced later. If for a reason acceptable by the university's policy, you have to miss the midterm or final exam, you need to obtain a permission from your Dean's office and I have to be notified of the permission **in advance**. Only when these are followed, the missed midterm will be accommodated either by reweighing or by writing a make-up, depending on the situation.
- 3) **Final exam** will be scheduled by the university's registrar's office. Also see **A1** in the Addendum below for other issues related to final exam.
- 4) In both midterm and final examinations, no electronic devices, including calculators and cell phones, are allowed.

Addendum applicable to all courses in the Faculty of Science

A1. Student Absences.

Academic Consideration for Student Absences.

Students who experience an extenuating circumstance (illness, injury or other extenuating circumstance) sufficiently significant to temporarily render them unable to meet academic requirements may submit a request for academic consideration through the following routes:

- (i) Submitting a Self-Reported Absence (SRA) form provided that the conditions for submission are met. To be eligible for a Self-Reported Absence:
 - an absence must be no more than 48 hours
 - the assessments must be worth no more than 30% of the student's final grade
 - no more than two SRAs may be submitted during the Fall/Winter term
- (ii) For medical absences, submitting a Student Medical Certificate (SMC) signed by a licensed medical or mental health practitioner to the Academic Counselling office of their Faculty of Registration.
- (iii) Submitting appropriate documentation for non-medical absences to the Academic Counselling office in their Faculty of Registration.

Note that in all cases, students are required to contact their instructors within 24 hours of the end of the period covered, unless otherwise instructed in the course outline.

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

https://www.uwo.ca/univsec/pdf/academic_policies/appeals/accommodation_illness.pdf

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

http://www.uwo.ca/univsec/pdf/academic_policies/appeals/medicalform.pdf.

Religious Accommodation. When a course requirement conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request accommodation for their absence in writing at least two weeks prior to the holiday to the course instructor and/or the Academic Counselling office of their Faculty of Registration. Please consult University's list of recognized religious holidays (updated annually) at

<https://multiculturalcalendar.com/ecal/index.php?s=c-univwo>.

Absences from Final Examinations. If you miss the Final Exam, please contact the Academic Counselling office of your Faculty of Registration as soon as you are able to do so. They will assess your eligibility to write the Special Examination (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? (e.g., more than 2 exams in 23-hour period, more than 3 exams in a 47-hour period).

If a student fails to write a scheduled Special Examination, the date of the next Special Examination (if granted) normally will be the scheduled date for the final exam the next time this course is offered. The maximum course load for that term will be reduced by the credit of the course(s) for which the final examination has been deferred. See the Academic Calendar for details (under Special Examinations).

A2. Accommodation and Accessibility.

Accommodation Policies. Students with disabilities work with Accessible Education (formerly SSD), which provides recommendations for accommodation based on medical documentation or psychological and cognitive testing. The policy on Academic Accommodation for Students with Disabilities can be found at: https://www.uwo.ca/univsec/pdf/academic_policies/appeals/AcademicAccommodation_disabilities.pdf,

A3. Academic Policies.

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

In accordance with policy available at

https://www.uwo.ca/univsec/pdf/policies_procedures/section1/mapp113.pdf,

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.

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.

Computer-marked multiple-choice tests and exams may be subject to submission for similarity review by software that will check for unusual coincidences in answer patterns that may indicate cheating.

In the event of health lockdown, tests and examinations in this course **will** be conducted using a remote proctoring service. 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. Completion of this course will require you to have a reliable internet connection and a device that meets the technical requirements for this service. More information about this remote proctoring service, including technical requirements, is available on Western's Remote Proctoring website at: <https://remoteproctoring.uwo.ca>.

A4. Support Services.

Please visit the Science and Basic Medical Sciences Academic Counselling webpage for information on adding/dropping courses, academic considerations for absences, appeals, exam conflicts, and many other academic related matters: <https://www.uwo.ca/sci/counselling/>.

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 Accessible Education at (519) 661-2147 if you have any questions regarding accommodations.

Western University is committed to a thriving campus as we deliver our courses in the mixed model of both virtual and face-to-face formats. We encourage you to check out the Digital Student Experience website to manage your academics and well-being: <https://www.uwo.ca/se/digital/>.

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/mentalhealth>

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>.