

## AM3815A (Fall 2024) Course Outline

### 1. Course Information

AM3815a --- Partial Differential Equation I (Fall 2024)

Classes begin: 8 Sep. 2022; Reading Week: 31 Oct.--6 Nov. 2022; Classes end: 8 Dec. 2022.

Prerequisites: (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's Designate (Department/Program Counsellors and Science Academic Advisors) 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.

### 2. Instructor Information

Instructors	Email	Office	Phone	Office Hours
Dr. Xingfu ZOU	xzou@uwo.ca	MC284	88781	Time: TBA In-person in MC284

Two hours per week will be determined after discussing with the class to maximize the accessibility. Extra meeting times other than the office hours can be scheduled by appointment. Students must use their Western (@uwo.ca) email addresses when contacting their me by email.

### 3. Course Syllabus, Schedule, Delivery Mode

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

Students are expected to be able to understand the backgrounds of the PDEs of aforementioned equations, the meanings of boundary and initial conditions; know to solve such equations, and gather information from solution to explain the phenomena described by the PDEs.

Relevant Key Sessional Dates

Classes begin: September 6, 2024

Fall Reading Week: October 12 – 20

Classes end: December 6, 2024  
Exam period: December 9 – 22, 2024

## 4. Course Materials

**Textbook:** Richard Haberman, Applied Partial Differential Equations, 5th edition, Pearson, 2013.

Some materials not included in this text may be adopted/added and will be testable in the midterm or final exam. As such, skipping classes may result in disadvantageous consequences.

Reference books:

- a. D. Logan, J. David Logan, Applied Partial Differential Equations, 3rd edition, Springer 2015
- b. P. J. Olver, Introduction to Partial Differential Equations, Springer, 2014, (corrected edition 2020)
- c. T. Hillen, I.E. Leonard, H. van Roessel, Partial Differential Equations, 2<sup>nd</sup> edition, Friesen Press, 2019.

Students are responsible for checking the course OWL site (<https://westernu.brightspace.com/>) regularly for news and updates. This is the primary method by which information will be disseminated to all students in the class.

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

## 5. Methods of Evaluation

The overall course grade will be calculated as listed below:

Assignments (6)	15%
Midterm Test	35%
Final Exam	50%

There will be 6 assignments with the exact due time to be announced depending on the pacing (approximately there is one due every other week). The main purpose of these 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 (pending on TA hours assigned to this course).

The **midterm** will be on Wednesday, October 23 at 7:30-9:30pm, and the room(s) will be announced later. It is expected to cover the materials of the first five weeks.

The **Final exam** will be scheduled by the university's registrar's office. It will be cumulative in contents, meaning that all materials in the whole semester may possibly be included in the final exam, although more weight will be given to the materials taught after the midterm.

## General information about missed coursework

Students must familiarize themselves with the *University Policy on Academic Consideration – Undergraduate Students in First Entry Programs* posted on the Academic Calendar:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/academic\\_consideration\\_Sep24.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/academic_consideration_Sep24.pdf),

This policy does not apply to requests for Academic Consideration submitted for **attempted or completed work**, whether online or in person.

The policy also does not apply to students experiencing longer-term impacts on their academic responsibilities. These students should consult [Accessible Education](#).

For procedures on how to submit Academic Consideration requests, please see the information posted on the Office of the Registrar's webpage:

[https://registrar.uwo.ca/academics/academic\\_considerations/](https://registrar.uwo.ca/academics/academic_considerations/)

All requests for Academic Consideration must be made within 48 hours after the assessment date or submission deadline.

All Academic Consideration requests must include supporting documentation; however, recognizing that formal documentation may not be available in some extenuating circumstances, the policy allows students to make one Academic Consideration request **without supporting documentation** in this course. However, the following assessments are excluded from this, and therefore always require formal supporting documentation:

- Final Examinations scheduled during official examination periods (Defined by policy)
- Midterm Test (Designated by the instructor as the one assessment that always requires documentation when requesting Academic Consideration)

When a student mistakenly submits their one allowed Academic Consideration request **without supporting documentation** for the assessments listed above or those in the **Coursework with Assessment Flexibility** section below, the request cannot be recalled and reapplied. This privilege is forfeited.

## Evaluation Scheme for Missed Assessments

Among the 6 **assignments**, only the best 5 will be counted toward your final grade. With such a flexibility adopted, for the first missed assignment, no academic consideration will be granted. For each of the other assignments (if any) that misses the deadline, a penalty of 10% per day will be applied.

If you miss the **midterm**, you need to follow the procedure stated above to request for Academic Consideration. If your request is approved, you can either write a make-up within 48 hours, or the weight of the midterm will be moved to the final exam which will be cumulative.

When a student misses the **Final Exam** and their Academic Consideration has been granted, they will be allowed to write the Special Examination (the name given by the University to a makeup Final Exam). See the Academic Calendar for details (under [Special Examinations](#)), especially for those who miss multiple final exams within one examination period.

## 6. Additional Statements

### Religious Accommodation

When conflicts with a religious holiday that requires an absence from the University or prohibits certain activities, students should request an accommodation for their absence in writing to the course instructor and/or the Academic Advising office of their Faculty of Registration. This notice should be made as early as possible but not later than two weeks prior to the writing or the examination (or one week prior to the writing of the test).

Please visit the Diversity Calendars posted on our university's EDID website for the recognized religious holidays:

<https://www.edi.uwo.ca>.

### Accommodation Policies

Students with disabilities are encouraged to contact Accessible Education, 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/Academic\\_Accommodation\\_disabilities.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/Academic_Accommodation_disabilities.pdf).

### Academic Policies

The website for Registrar Services is <https://www.registrar.uwo.ca/>.

In accordance with policy,

[https://www.uwo.ca/univsec/pdf/policies\\_procedures/section1/mapp113.pdf](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 their official university address is attended to in a timely manner.

For the midterm test and the final exam, **no electronic devices are permitted**.

**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:

[https://www.uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_discipline\\_undergrad.pdf](https://www.uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_discipline_undergrad.pdf).

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>.

### Support Services

Please visit the Science & Basic Medical Sciences Academic Advising 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/>.

Students who are in emotional/mental distress should refer to Mental Health@Western (<https://uwo.ca/health/>) for a complete list of options about how to obtain help.

Western is committed to reducing incidents of gender-based and sexual violence and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced sexual or gender-based violence (either recently or in the past), you will find information about support services for survivors, including emergency contacts at

[https://www.uwo.ca/health/student\\_support/survivor\\_support/get-help.html](https://www.uwo.ca/health/student_support/survivor_support/get-help.html).

To connect with a case manager or set up an appointment, please contact [support@uwo.ca](mailto:support@uwo.ca).

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

[http://academicsupport.uwo.ca/accessible\\_education/index.html](http://academicsupport.uwo.ca/accessible_education/index.html)

if you have any questions regarding accommodations.

Additional student-run support services are offered by the USC, <https://westernusc.ca/services/>.