

The University of Western Ontario

Department of Mathematics

Mathematics 3122A, Fall 2021
REAL ANALYSIS II

Lectures: Mon, Wed, Fri, 9:30am–10:30am, MC 108

Tutorials: Thu, 11:30am–12:30pm, MC 106

Instructor: Dr. Janusz Adamus

Office: MC 122

E-mail: jadamus@uwo.ca

Office Hours: Fridays, 10:30am–12:30pm, in person

Teaching Assistant: TBA

Course Website: <http://uwo.ca/math/faculty/adamus/teaching/3122A2021/>

Students are responsible for checking the course website 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.

Textbook: The course will be based largely, but not exclusively, on the following required book:
Lectures on Real Analysis by F. Lárusson, publ. Cambridge University Press, 2012.

Prerequisites: Mathematics 2122A/B with a minimum mark of 60%.

Senate Policy on Prerequisites: Unless you have either the requisites for this course or written special permission from your Dean to enroll 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.

Tutorials: There will be weekly tutorials in which problems will be worked out, and where students will be able to ask questions and get more insights on topics covered in class.

Course Outline: Differentiation, the Mean Value Theorem, and integration. Metric spaces, including topology, convergence, compactness, completeness, and connectedness. Uniform convergence of functions. Selected additional topics.

Evaluation: The course mark will be based on 9 quizzes (15 min. each), 2 term tests (approx. 50 min. each) held in class, and the final exam, with the following weights:

- Best 8 out of 9 quizzes: 24%
- Term tests: 36%
- Final exam: 40%.

Examination Dates: Quizzes will be held at the start of the class on Sept.20, Sept.27, Oct.4, Oct.13, Oct.18, Nov.8, Nov.15, Nov.29, and Dec.6. The term tests will be held on **Monday, Oct.25** and **Monday, Nov.22**, 2021. Final exam TBA by the Registrar.

Problem Sets: The problem sets will be assigned weekly. *These will not be submitted for marking.* However, they are essential to the understanding of the material and preparation for the quizzes and tests.

Quizzes: The quizzes will be based on the material of the recently assigned problem sets.

What is Expected of the Student: The goal of the Real Analysis stream (Math 2122 and Math 3122) is for the students to achieve a good understanding of the fundamental concepts and methods of mathematical analysis, as well as a facility in reading, understanding and writing proofs. Class (and tutorial) attendance is required, class participation is expected. The latter includes both asking questions and responding to instructor's questions. Preparation for each class will involve reading one's class notes and the textbook. The students are expected to complete all the assigned practice problems.

Students that work at a consistent pace throughout the term (and do not put off asking questions until exam time), use help resources available (e.g., tutorials, office hours), and do self-directed exploration of topics, tend to achieve better results in university-level mathematics courses.

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).

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/Academic_Accommodation_disabilities.pdf

Academic Policies: The website for Registrarial Services is <http://www.registrar.uwo.ca>. In accordance with policy, 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.

No electronic devices will be permitted on tests and exams.

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.

Support Services: Please visit the Science & 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.

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>.

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.

In the event of a 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://remote-proctoring.uwo.ca>.