

APPLMATH 3811A Course Outline

1. Course Information

Course Information

Applied Mathematics 3811A, Complex Variables with Applications, FW 2021-22

Times and Location: M/W/F 09:30-10:20, MC 17 (In-Person Delivery)

List of Prerequisites

Calculus 2303B or Calculus 2503B

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.

2. Instructor Information

Instructor	Email	Office	Phone	Office Hours
Dr. Geoff Wild, Professor	gwild@uwo.ca	TBD	Ext 88784	Mon 15:30-16:30

Students must use their Western (@uwo.ca) email addresses when contacting their instructors.

Please use “APPLMATH 3811A” (exactly as typed) in the subject line of your email.

Please know that I will not use email to explain mathematical concepts, nor will I necessarily reply instantaneously to email messages I receive (especially on weekends and holidays).

Office hours will be held via zoom.

3. Course Syllabus, Schedule, Delivery Mode

Calendar Description

Functions of a complex variable, analytic functions, integration in the complex plane, Taylor and Laurent series, analytic continuation, Cauchy's theorem, evaluation of integrals using residue theory, applications to Laplace transforms, conformal mapping and its applications.

Course-Level Learning Outcomes

- Carry out basic arithmetic using complex numbers, and elementary functions of complex numbers (complex functions).
- Explain what it means for a complex function to be continuous, differentiable (analytic), and integrable. Demonstrate the continuity, differentiability, and integrability of a complex function in a variety of ways.
- Calculate limits, derivatives, and (contour) integrals of elementary complex functions, and compositions thereof in a variety of ways.
- Analyze the behaviour of sequences of complex functions, explain the relationship between such behaviour and the analyticity of a complex function, and explain the implications of such behaviour for complex integration.
- Apply your knowledge of complex functions to solve problems typically associated with the calculus of functions of a single real variable.
- Construct written mathematical arguments in a clear, concise, and grammatically correct manner.

Contingency Plans

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 (see below).

In the (hopefully unlikely) event that the instructor cannot access campus (e.g., because of a failed COVID-19 screen), classes will temporarily move to an online synchronous mode of delivery. In this case, online classes will be recorded, and videos will be posted on OWL.

4. Course Materials

Required Text

Fundamentals of Complex Analysis with Applications to Engineering and Science, 3rd Ed (2003). By E. B. Saff & A. D. Snider, and published by Pearson Education Inc. ISBN 0-13-907874-6

An electronic copy of the required text is available for purchase through the [UWO Bookstore's website](#).

OWL Site

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.

Technical Requirements

You will need access to a computer and a stable internet connection in order access the OWL course page, complete OWL quizzes, and upload your completed assignments.

In the event of a COVID-19 resurgence during the course, you will also need a computer with a working microphone and webcam, and access to a private space in which you can complete online evaluations (see note about remote proctoring, below)

5. Methods of Evaluation

Students will be expected to complete assessments independently. No group assessment will occur.

The overall course grade will be calculated as listed below:

Assignments (3 @ 5% each)	15 %
Test (2 @ 20% each)	40 %
Electronic Participation Portfolio	5 %
Final Examination	40 %

Assignments

- Due at or before 11:55 pm on Sept 29, Oct 27, and Dec 1, respectively
- Late submissions will be penalized at rate of 20% (of the 5% total) per day. It is unwise to wait until the last minute to submit an assignment, as doing so puts you risk of late submission due to technical difficulties
- Submissions occur via the Gradescope platform, and you should familiarize yourself with the submission process well before your first deadline.
- Accommodations will be handled by shifting weight to the Final Examination

Tests

- Test 1
 - Wednesday, October 6
 - 45 minutes, in class (may be adjusted if public-health restrictions come into force)
 - Accommodated absences will be handled by shifting weight to the Final Examination
- Test 2
 - Monday, November 15
 - 45 minutes, in class (may be adjusted if public-health restrictions come into force)
 - Accommodated absences will be handled by shifting weight to the Final Examination

Electronic Participation Portfolio

- Due at or before 11:55 pm on Dec 8.
- We will tackle approximately 30 Lessons over the course of the term. Almost every lesson is associated with a short OWL Quiz. These quizzes are meant to be formative, meaning their aim is to help you develop and solidify your understanding of basic course concepts. As such, each quiz allows for multiple attempts and only your best grade is recorded.
- Each quiz will contribute an equal amount to the grade you receive on your Electronic Participation Portfolio.
- I strongly recommend that you complete quizzes in a timely manner. It is unwise to wait until the last minute to complete quizzes, as doing so puts you risk of missing deadlines due to technical difficulties.
- Accommodations will be handled by shifting the full weight of the portfolio to the Final Examination.

Final Examination

- Scheduled by the Registrar during the Midyear Exam Period (Dec 10-21)
- Three hours
- Based on all material covered in the course

Accommodated Evaluations

As described in the “Methods of Evaluation Section,” late assignments will be accepted but will be penalized at a rate of 20% per day, meaning that 1% of the 5% available will be deducted per day, including weekends and holidays. The first 1% will be deducted once the 11:55pm deadline has passed, the next deduction will occur 24 hours after that, and so on.

As described in the “Methods of Evaluation Section,” excused absences will be accommodated by shifting weight to the cumulative final examination.

6. 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](#)).

6. 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/Academic_Accommodation_disabilities.pdf

7. 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 device whatsoever will be permitted to be used on tests and examinations.

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.

In the event of a health lock-down, 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>.

8. 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.

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>.