

## NMM 1412 A (Fall 2025) Course Outline

### 1. Course Information

#### Numerical and Mathematical Methods 1412A – Calculus for Engineers I, Fall 2025

**Course Description:** Introduction to complex numbers, limits, continuity, differentiation of functions of one variable with applications, extreme values, l'Hospital's rule, antiderivatives, definite integrals, the Fundamental Theorem of Calculus, the method of substitution. Antirequisite(s): Calculus 1000A/B, Calculus 1500A/B, Mathematics 1225A/B, Mathematics 1230A/B, the former Applied Mathematics 1412A/B, the former Applied Mathematics 1413. Extra Information: 3 lecture hours, 1 tutorial hour. Numerical and Mathematical Methods 1412A/B is a suitable prerequisite for any course that lists Calculus 1000A/B as prerequisite. Restricted to students in the Faculty of Engineering.

	Section	Instructor	Days	Hours	Location
Lectures	001	O. Trichtchenko			
	002	N. Zarir			

**Antirequisite(s):** Calculus 1000A/B, Calculus 1500A/B, Mathematics 1225A/B, Mathematics 1230A/B, the former Applied Mathematics 1413.

**Prerequisite(s):** Ontario Secondary School MCV4U or equivalent, or Mathematics 0110A/B.

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Dean's Designate (Department/Program Counsellors and Science Academic Advisors) to enroll in it, you may be removed and withdrawn from this course in accordance with university policy. This may be done after the add/drop deadline of the academic term, and the course will be marked as withdrawn (WDN) on your academic record. This decision may not be appealed.

### 2. Instructor Information

Section	Name	Email	Office Hours
001	Dr. O. Trichtchenko	nmm1412@uwo.ca	
002	Dr. N. Zarir		

Students must use their Western (@uwo.ca) email addresses when contacting their instructors. Please allow at least 24 hours for a response Monday to Friday and 48 hours during the weekends.

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

**Course description:**

Topics covered include an introduction to complex numbers, limits, continuity, differentiation of functions of one variable with applications, extreme values, l'Hospital's rule, antiderivatives, definite integrals, the Fundamental Theorem of Calculus, the method of substitution.

**Learning outcomes:**

By the end of the course, the students will be able to

1. Operate with complex numbers
2. Compute derivatives using both the definition of limits and common identities and differentiation rules.
3. Calculate definite and indefinite integrals.
4. Be familiar with trigonometric, exponential and logarithmic functions and understand inverse functions.
5. Understand the fundamental theorem of calculus.
6. Apply their knowledge to problems and physical scenarios.

**Course Delivery:**

Course meetings are in-person and will involve three weekly lectures and one tutorial approximately every other week.

**Topic outline:**

The general order of topics and their timeline is found on OWL. The course will cover selected material in Preliminaries, Appendices I-III, and Chapters 1-5 in Calculus by Adams and Essex. A list of suggested exercises will be provided; it is strongly recommended that you solve as many of them as possible.

## 4. Course Materials

**Textbook:** Calculus – A Complete Course, 10th edition, R. Adams, C. Essex (Pearson).

**Access to MyLab** from Pearson can be bought as a package with the text above.

*Note: A print copy can be ordered directly from the publisher.*

**Technical Requirements:** A computer, tablet or phone to access the textbook, MyLab and LearningCatalytics.

**Costs of Textbooks and Other Learning Materials/Activities**

The link to the textbook is found here:

[https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2025A&courses%5B0%5D=001\\_UW/NMM1412A](https://bookstore.uwo.ca/textbook-search?campus=UWO&term=W2025A&courses%5B0%5D=001_UW/NMM1412A)

All course material will be posted to OWL: <https://westernu.brightspace.com/>

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

### Grading Scheme and Assessment Dates

The overall course grade will be calculated as listed below:

Assessment Type	Weight	Date	Topics
Homework (Quizzes using Pearson's MyLab, best 4 of 5)	20%	Approx. biweekly, due dates and submission through Pearson's MyLab on OWL	Lectures prior to quiz
In class participation using Pearson's Learning Catalytics (do at least 15 sessions)	5%	A couple of questions every lecture - not marked for correctness, just completion	The lecture questions appear in
Midterm	35%	Sunday Oct. 19, 10 AM – 12 PM ( <i>makeup midterm on Wednesday, Oct. 22 at 7 p.m. to 9 p.m.</i> )	Up to and including all sections covered in Chapter 2
Final Exam	40%	TBD, December exam period	Cumulative

*The Department of Physics and Astronomy may, in exceptional cases, adjust the final course marks in order to conform to Departmental policy.*

#### **In Class Participation – Learning Catalytics**

In each lecture, there will be a few questions to be answered through Pearson's Learning Catalytics. These are only marked for completion, not correctness. To get full marks for in class participation, you must complete at least half modules (a module is a set of questions, there is one per lecture). These can be accessed through OWL's Pearson tab, using a code that will appear in lecture.

#### **Quizzes - MyLab through OWL**

There will be a quiz roughly every other week administered through MyLab, for a total number of 5 quizzes. The best 4 out of the 5 quizzes will count toward your "Homework" grade. Should extenuating circumstances arise, students do not need to request Academic Consideration, and they are permitted to submit their quiz up to 72 hours past the deadline without a late penalty. Submissions received after the expiration of this additional time will receive a mark of zero. Details will be coming through the course OWL page. Use of generative AI to solve problems on homework assignments (e.g., ChatGPT, Copilot, Gemini) is not permitted.

#### **Midterm**

The midterm will take place Sunday, October 19 from 10 am to 12 pm, locations TBA. Academic consideration for the Midterm Exam requires the submission of formal supporting documentation to your Home Faculty Academic Counselling Office.

The makeup midterm will take place Wednesday, October 22 at 7 p.m. to 9 p.m., locations TBA.

## **Final Examination**

The Final Examination will be cumulative. The date and time of the final exam will be announced by the Registrar's Office. Students seeking a make-up exam for any reason must secure approval from the appropriate Faculty Counseling Office.

## **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:**

- Midterm
- Final exam (Defined by policy)

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.

**Academic Consideration request without supporting documentation** (or Undocumented Absence):

An undocumented absence is only valid for a 24-hour period, from midnight on the day requested to midnight of the following day. An appropriate use of an undocumented absence would be for an in-class assessment that takes place that day. Where the time given to complete the assessment is longer than 24 hours, an undocumented absence will not cover a student for the full time given to complete the assessment, and flexibility considerations in submitting the assessment will override the undocumented absence.

## **Evaluation Scheme for Missed Assessments**

- Missed midterm (with an approved and documented Academic Consideration): makeup midterm
- Missed midterm and makeup midterm (with an approved and documented Academic Consideration): weight transferred to the final exam

- Missed quizzes (with Assessment Flexibility after an approved academic consideration request, see below): quizzes reweighed
- Missed in-class participation (with Assessment Flexibility after an approved academic consideration request, see below): reweighed

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.

### **Essential Learning Requirements**

Even when Academic Considerations are granted for missed coursework, the following are deemed essential to earn a passing grade.

To pass the course, students must achieve a minimum weighted average of 40% on the midterm and final exams. A student who does not meet this criterion will receive a maximum grade of 45%, regardless of marks in the other components of the course.

### **Coursework with Assessment Flexibility**

By policy, instructors may deny Academic Consideration requests for the following assessments with built-in flexibility:

#### **Flexible Completion**

**Quizzes.** This course has 5 quizzes and the 4 quizzes with the highest marks are counted towards your final grade. Should extenuating circumstances arise, students do not need to request Academic Consideration for the first missed quizzes. Academic consideration requests will be denied for the first missed quizzes. Academic Consideration requests may be granted when students miss more than one quizzes, and these additional missed quizzes will be reweighted to the other quizzes.

**In class participation using Learning Catalytics.** This course has over 30 modules of Learning Catalytics questions (roughly one per textbook section which is one per lecture, each module with roughly 2 or 3 questions). Students must complete at least 15 to get full marks for in class participation. Should extenuating circumstances arise, students do not need to request Academic Consideration for the first half of missed modules. Academic Consideration requests may be granted when students miss more than 15 of these, and these additional missed modules will not be counted against the participation marks. Note that marks are assigned only for completion and not correctness.

#### **Deadline with a No-Late-Penalty Period**

**Quizzes.** Students are expected to submit all quizzes by the deadline listed. Should extenuating circumstances arise, students do not need to request Academic Consideration, and they are permitted to submit their quiz up to 72 hours past the deadline without a late penalty. Submissions received after the expiration of this additional time will receive a mark of zero. Academic Consideration requests may be granted only for extenuating circumstances that started before the deadline and lasted longer than the No-Late-Penalty Period (72 hours).

## 6. Additional Statements

### 6.1 Religious Accommodation

When conflicts arise 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 of 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>

### 6.2 Academic 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).

### 6.3 General Academic Policies

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

**Use of @uwo.ca email:** 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 email address. It is the responsibility of the account holder to ensure that emails received from the University at their official university address are attended to in a timely manner.

**Requests for Relief** (formally known as “appeals”)

Policy on Request for Relief from Academic Decision:

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/requests\\_for\\_relief\\_from\\_academic\\_decisions.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/requests_for_relief_from_academic_decisions.pdf)

Procedures on Request for Relief from Academic Decision (Undergraduate):

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/undergrad\\_requests\\_for\\_relief\\_procedure.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_requests_for_relief_procedure.pdf)

### 6.4 Scholastic Offences

Policy on Scholastic Offences:

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/scholastic\\_offences.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/scholastic_offences.pdf)

Procedures on Scholastic Offences (Undergraduate):

[https://uwo.ca/univsec/pdf/academic\\_policies/appeals/undergrad\\_scholastic\\_offence\\_procedure.pdf](https://uwo.ca/univsec/pdf/academic_policies/appeals/undergrad_scholastic_offence_procedure.pdf)

### Use of Electronic Devices During Assessments

In courses offered by the Faculty of Science, the possession of unauthorized electronic devices during any in-person assessment (such as tests, midterms, and final examinations) is strictly prohibited. This includes, but is not limited to: mobile phones, smart watches, smart glasses, and wireless earbuds or headphones.

Unless explicitly stated otherwise in advance by the instructor, the presence of any such device at your desk, on your person, or within reach during an assessment will be treated as a *scholastic offence*, even if the device is not in use.

Only devices expressly permitted by the instructor (e.g., non-programmable calculators) may be brought into the assessment room. It is your responsibility to review and comply with these expectations.

### Use of Generative AI Tools

Unless otherwise stated, the use of generative AI tools (e.g., ChatGPT, Microsoft Copilot, Google Gemini, or similar platforms) is **not permitted** in the completion of any course assessments, including but not limited to: assignments, lab reports, presentations, tests, and final examinations.

Using such tools for content generation, code writing, problem solving, translation, or summarization—when not explicitly allowed—will be treated as a **scholastic offence**.

If the use of generative AI is permitted for a particular assessment, the conditions of use will be specified by the instructor in advance. If no such permission is granted, students must assume that use is prohibited. It is your responsibility to seek clarification before using any AI tools in academic work.

### 6.5 Support Services

Please visit the Science & Basic Medical Sciences Academic Advising webpage for information on adding/dropping courses, academic considerations for absences, requests for relief, 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 (GBSV) and providing compassionate support to anyone who has gone through these traumatic events. If you have experienced GBSV (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. If you have any questions regarding accommodations, 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)

Learning-skills counsellors at Learning Development and Success (<https://learning.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.

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