NORTHWESTERN POLYTECHNIC

SCHOOL OF BUSINESS AND EDUCATION- DEPARTMENT OF ACADEMIC UPGRADING

COURSE OUTLINE- Fall 2025

MA0131 (EC): Mathematics Grade 12 Calculus Equivalent – 5 (7-0-0) HS

112.5 Hours for 15 Weeks

Northwestern Polytechnic acknowledges that our campuses are located on Treaty 8 territory, the ancestral and present-day home to many diverse First Nations, Metis, and Inuit people. We are grateful to work, live and learn on the traditional territory of Duncan's First Nation, Horse Lake First Nation and Sturgeon Lake Cree Nation, who are the original caretakers of this land.

We acknowledge the history of this land and we are thankful for the opportunity to walk together in friendship, where we will encourage and promote positive change for present and future generations.

INSTRUCTOR:	Sheryl Heikel	**PHONE:**	Office: 780–539–2059
OFFICE:	C417	**E-MAIL:**	sheikel@nwpolytech.ca
OFFICE HOURS:	Wednesday 1:00-2:00pm OFFICE C417 or Friday 11:30-12:30 J103 (Please email to book this time)		

CALENDAR DESCRIPTION:

This course covers limits of sequences, series, and functions, secants and tangents, derivatives from first principles, chain rule, product rule, quotient rule, implicit differentiation, curve sketching, maxima and minima applications, relates rates applications, antiderivatives and area, limits, and derivatives of trigonometric functions.

PREREQUISITE(S)

Requisites:

- Complete 1 of the following:
  - MA0120 - Mathematics Grade 20-1 Equivalent (5)
  - Equivalent course
  - Concurrently enrolled in:

  MA0130 - Mathematics Grade 12 Equivalent (Pre-Calculus 30-1) (5)

COREQUISITE(S):

- Concurrently enrolled in:

  MA0130 - Mathematics Grade 12 Equivalent (Pre-Calculus 30-1) (5)

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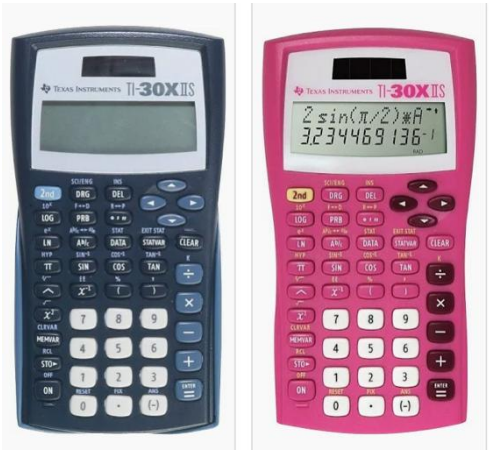
REQUIRED TEXT/RESOURCE MATERIALS:



- Package of MA0131 modules, 2022;
- Non-graphing scientific calculator (TI-30XIIS recommended – Cost about $26 Staples)
- Internet access for **MyClass** and additional material.
- Students are responsible for all fees associated with ProctorU, a live proctoring service for online exams. Fees are paid when you schedule your exams through ProctorU.

  Pricing per exam is as follows:

  60 minutes or less - $16 USD
  61-120 minutes - $25 USD
  121 - 180 minutes - $31 USD This course maximum exam costs are $181.

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DELIVERY MODE(S):

- Asynchronous (online) courses are delivered online through NWP's learning management system. There are no set class times, and students attend remotely and when it works best for them.
- This means that you will complete coursework on your own. There are no scheduled meeting times but there are weekly due dates. The course is broken into 46 lessons, separated into 9 modules.

LEARNING OUTCOMES:

As a result of taking this course, students will gain the ability to:

- draw graphs of a functions by applying transformations to the graphs of known functions
- simplify rational expressions, using any of the four basic operations
- determine the limit of a functions for a given value using the graph of the function
- compute limits of functions, using definitions and limit theorems
- determine the slopes and equations of the tangent and the normal lines at a given point on a curve, using the definition of a derivative
- differentiate polynomial functions, using the derivative theorems for sum and difference
- determine the derivative of a combination function with the product and quotient using the chain rule
- differentiate a function using implicit differentiation
- sketch the graph of a function using first and second derivatives to find maxima, minima, and inflection point
- determine intervals where the derivative is greater than zero or less than zero in order to predict where the function is increasing or decreasing

- determine whether or not a critical point is a maximum or a minimum
- determine maximum or minimum values for application involving numbers, geometry, distance and time, economics, and science
- solve rate of change applications relating to science, area, volume, and related motion
- determine the area between a curve and the x-axis over a given interval
- determine velocity and displacement by finding the anti-derivatives of acceleration and velocity functions
- determine the limit for a trigonometric function as the angle approaches a finite or infinite value
- find the derivative of more complicated trigonometric functions using the power, chain, product and quotient rule

TRANSFERABILITY:

This course is listed in the Alberta Transfer Guide. It is accepted at colleges and universities in Alberta as equivalent to Math 31. Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at the Alberta Transfer Guide main page http://www.transferalberta.alberta.ca.

** For courses with alpha (letter) grading, a grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. **Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability.**

EVALUATIONS:

4 section tests (best 4 out of 5 completed exams)	50% (12.5% each)
Midterm	20%
Final Exam	30% TOTAL 100%

GRADING CRITERIA

Please note that most institutions will not accept your course for transfer credit **IF** your grade is **less than C-**.

Grading Chart for courses with Alpha Grading:

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	95-100		C+	2.3	67-69
A	4.0	85-94		C	2.0	63-66
A-	3.7	80-84		C-	1.7	60-62
B+	3.3	77-79		D+	1.3	55-59
B	3.0	73-76		D	1.0	50-54
B-	2.7	70-72		F	0.0	00-49

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COURSE SCHEDULE/TENTATIVE TIMELINE: See page 6 of this document.

STUDENT RESPONSIBILITIES:

Refer to the Polytechnic's Policy on Student Rights and Responsibilities at https://nwpolytech.ca/about/administration/policies/fetch.php?ID=69

Students are expected to participate fully in achieving their educational goals and to take responsibility for their learning.

In addition to the *Student Rights and Responsibilities* as set out in the polytechnic calendar, the following guidelines will help you to achieve yio an effective learning environment for everyone. We ask the cooperation of all students in the following areas of classroom environment:

1. Check **D2L** as well as **NWP email** on a regular basis.
2. Exams must be written on or about the suggested date.
3. If an emergency prevents attendance on an exam day, students must contact me before the end of the exam (as soon as possible) via phone or email, and they may be asked to provide documentation to justify their absence.
4. No unspecified electronic devices will be permitted during exams.
5. Try to work on your online course daily. Math, and especially calculus, must be practiced and not 'crammed' before an exam. **An average of 2 hours work per day is required for this course**.
6. **Please communicate all requests regarding appointments, etc. via email**. I am not always in my office and will often not receive a message in time.

STATEMENT ON ACADEMIC MISCONDUCT:

Academic Misconduct will not be tolerated. For a more precise definition of academic misconduct and its consequences, refer to the Student Rights and Responsibilities policy available: Student Rights and Responsibility Policy

**Note: all Academic and Administrative policies are available on the same page.
Policies Directory | Northwestern Polytechnic

Additional Information:

USING PROCTORU:

This course uses ProctorU Live for online exams. To utilize this service, you are required to complete the following steps:

- Create a ProctorU account by clicking the ProctorU link in the course.
- Download and install the Guardian Web Browser, Google Chrome, and the ProctorU extension.
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- Schedule each exam at least 3 days (72 hours) in advance. If you miss this deadline, you cannot take the exam.
- Pay for the proctoring service. The fees are exclusively your responsibility and in no event shall be the responsibility of Northwestern Polytechnic.

For more detailed instructions click here, and for video instructions click here.

Before each exam, you must complete a room scan with your web camera, during which you will show your surroundings to a live proctor.

The invigilator will ask to view (but not collect or store) your student identification to verify your identity and will remotely access your computer to unlock the exam. When monitoring your actions via video streaming, the invigilator may possibly record your actions if they suspect academic integrity behavioural issues. You will be verbally notified if/when recording begins.

The collection of and access to the personal information listed above is permitted under subsection 33(c) of the *Freedom of Information and Protection of Privacy Act*, RSA 2000, c F-25, which states, “No personal information may be collected by or for a public body unless that information relates directly to and is necessary for an operating program or activity of the public body.” In addition, subsection 39(4) states, “A public body may use personal information only to the extent necessary to enable the public body to carry out its purpose in a reasonable manner.”

Records Retention: Any video records of you created by ProctorU will be kept by ProctorU for a maximum of 7 days in order to make a decision about any possible academic integrity infraction, after which time it shall be permanently deleted. All other personal information collected and stored by ProctorU within your profile account will be permanently deleted if the account has not been used after one year.

Consent to Store Personal Information Outside Canada

ProctorU is an American company. An agreement is in place between ProctorU and Northwestern Polytechnic by which ProctorU will take reasonable steps to protect your personal information from unauthorized access and disclosure. Information about how ProctorU protects your privacy can be found in their Privacy Policy.

By using the ProctorU service via Northwestern Polytechnic, you consent to the storage of and access to your personal information outside of Canada.

This consent is in effect from the day you register with ProctorU and expires one year after completion of your exam.

Additional privacy and liability information regarding the use of ProctorU is available on the NWP website.

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MA0131 Tentative Test Schedule for Fall 2025 ONLINE

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Test #	% towards final grade	Topics	Recommended Test Date	Date written	Mark
1	12.5%	Review & Limits	September 22		
2	12.5%	The Derivative & More Derivatives	October 10		
Midterm Exam	20%	All of the Above	October 15		
3	12.5%	Curve Sketching & Maximum/Minimum	October 31		
4	12.5%	Applications: Rate of Change & Anti-derivatives and Area	November 24		
5	12.5%	Derivatives of Trigonometric Functions	December 11		
Final Exam	30%	All of the Above	TBA (Dec 13-20) 3 hour exam		

*****All tests MUST be completed by Dec 11th.**

*****Midterm MUST be completed by Ma 4th.**