



**DEPARTMENT OF SCIENCE**

**COURSE OUTLINE – FALL 2021**

**MA1130 (C2): ELEMENTARY CALCULUS I– 3 (3-2-0) 75 Hours over 15 Weeks**

Grande Prairie Regional College respectfully acknowledges that we are located on Treaty 8 territory, the traditional homeland and gathering place for many diverse Indigenous peoples. We are honoured to be on the ancestral lands of the Cree, Dene/Beaver and Métis, whose histories, languages, and cultures continue to influence our vibrant community. We are grateful to have the opportunity to work, learn, and live on this land.

**INSTRUCTOR:** Tom McLeister      **PHONE:** (780) 539-2961

**OFFICE:** J212      **EMAIL:** [tmcleister@gprc.ab.ca](mailto:tmcleister@gprc.ab.ca)

**OFFICE HOURS:** MTWRF 10:00 – 11:00

**CALENDAR DESCRIPTION:**

The course will include a review of analytic geometry; functions, limits, continuity; differentiation of elementary functions; applications to maxima, minima and rates; introduction to integration; Fundamental Theorem; numerical integration; and areas and other applications of the definite integral to areas.

**PREREQUISITE:** Mathematics 30-1 or equivalent

**REQUIRED TEXT/RESOURCE MATERIALS:**

Open (free) textbook at [www.lyryx.com](http://www.lyryx.com). Calculus: Early Transcendentals by David Guichard.

**DELIVERY MODE(S):**

Lecture:	C2	13:00—14:20	W F	J203
Seminar:	CS1	14:30—16:20	R	J226

## **COURSE OBJECTIVES:**

This course is an introduction to calculus as a basic mathematical tool in solving optimization, rate of change and area problems. The objective of the course is to provide a basic knowledge of calculus and its applications.

## **LEARNING OUTCOMES:**

At the end of this course, students should be able to...

- State the definition of a function and describe the various ways a function can be represented;
- Find the domain and range of a function;
- Identify and sketch standard algebraic, exponential, logarithmic, trigonometric and piecewise defined functions;
- Compose functions;
- Calculate limits of functions using the limit laws;
- Identify points or intervals where a function is continuous/discontinuous;
- Calculate derivatives of functions using the limit definition and the differentiation rules;
- Estimate the value of a function at a point using the tangent line (linear) approximation or differentials;
- Calculate derivatives implicitly and solve related rates problems;
- Sketch the graph of a function and indicate the extreme values, points of inflection, asymptotes, and intervals of concavity;
- Apply calculus to solve optimization problems;
- Calculate definite integrals using Riemann sums and the Fundamental Theorem of Calculus;
- Calculate definite and indefinite integrals using substitution;
- Use the definite integral to find the area between curves.

## TRANSFERABILITY:

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.ca>.

\*\* 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:

Assignments:	15%
Quizzes:	15%
Midterm:	2 × 20% (Tentatively F Oct 22, W Nov 24)
Final Exam:	30% (Cumulative and scheduled during exam period)

Note: There will be no make-up quizzes or exams. If a quiz/test is missed for a valid reason and proper documentation is provided, then the weight of the quiz/test will be transferred to another component. Late assignments will not be accepted.

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

Alpha Grade	4-point Equivalent	Percentage Guidelines		Alpha Grade	4-point Equivalent	Percentage Guidelines
A+	4.0	90-100		C+	2.3	67-69
A	4.0	85-89		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

## COURSE SCHEDULE/TENTATIVE TIMELINE:

Week	Topics/Text Sections	Notes
1. Sept. 1-3	Precalculus Review 1.1, 1.2, 2.1, 2.2	First class: Wed. Sept. 1
2. Sept. 6-10	Precalculus Review 1.1, 1.2, 2.1, 2.2	Mon Sept 6 Labour Day: No classes.
3. Sept. 13-17		
4. Sept. 20-24		Thur Sept 9: Last day to add/drop a course
5. Sept. 27-Oct 1	Differentiation	Oct 11—15: No classes
6. Oct. 4-8	4.1-4.7, 2.3, 2.5	
7. Oct. 11-15		
8. Oct. 18-22	Applications of Differentiation	
9. Oct. 25-29	5.1-5.4.1, 3.5, 5.6, 5.7	<b>Fri. Oct 22: 1<sup>st</sup> Midterm (Tentative)</b>
10. Nov. 1-5		
11. Nov. 8-12		
12. Nov. 15-19	Integration	Thur Nov 11: Remembrance Day—No classes
13. Nov. 22-26	Ch.6	
14. Nov 29-Dec.3	Integration	
15. Dec.6-9	7.1	<b>Wed Nov 24: 2<sup>nd</sup> Midterm (Tentative)</b> <b>Fri Nov 26: Last Day to withdraw</b>
	Applications of Integration	
	8.1	
15. Dec.6-9	Applications of Integration	Thur Dec 9: Last day of classes
	8.2	
Dec. 11-20	<b>Final Exams</b>	

## STUDENT RESPONSIBILITIES:

Attend all lectures and seminars. If a lecture or seminar is missed, it is the student's responsibility to catch up on the material and obtain the missing lecture notes.

## STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Calendar at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <https://www.gprc.ab.ca/about/administration/policies>

\*\*Note: all Academic and Administrative policies are available on the same page.

**CALCULATORS:** Use of calculators is not permitted on the quizzes or exams.

**FINAL EXAM:** The final exam will be written during the exam period, between December 11 and December 20 inclusive, including Saturdays and evenings. It is the student's responsibility to be available to write the exam at the scheduled time. Writing early is not permitted.