



DEPARTMENT OF SCIENCE

COURSE OUTLINE – FALL 2017

MA1130 (E2/F2): Elementary Calculus I – 3 (3-2-0) UT 15 Weeks, 75 Hours

INSTRUCTOR: Dr. Brian Redmond **PHONE:** 780-539-2093
OFFICE: J206 **E-MAIL:** bredmond@gprc.ab.ca
OFFICE HOURS: Tues. 11:30 a.m.-12:50 p.m. & Thurs. 1:00-2:20 p.m.

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(S)/COREQUISITE: Mathematics 30-1 or equivalent.

REQUIRED TEXT/RESOURCE MATERIALS: Calculus: Early Transcendentals by David Guichard. Free pdf version at: <https://lyryx.com/products/mathematics/calculus-early-transcendentals/>

DELIVERY MODE(S):

Lectures:	E2/F2	T R	8:30-9:50 a.m.	J202
Seminar:	E2	W	2:30-4:20 p.m.	J227
	F2	F	2:30-4:20 p.m.	J227

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;
- Identify and sketch standard algebraic, exponential, logarithmic, trigonometric and piecewise defined functions;
- Find the domain and range of a function;
- Apply transformations of functions (shift, stretch and reflect) and combine functions by the standard arithmetic operations;
- 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, vertical, horizontal and oblique 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 tables of integrals and substitution;
- Use the definite integral to find the area between curves.

TRANSFERABILITY: University of Alberta*, University of Calgary*, Athabasca University*, Augustana Faculty, University of Alberta, Concordia University College, Canadian University College, Grant MacEwan University, King's University College.

***Warning:** Although we strive to make the transferability information in this document up-to-date and accurate, **the student has the final responsibility for ensuring the transferability of this course to Alberta Colleges and Universities.** Please consult the Alberta Transfer Guide for more information. You may check to ensure the transferability of this course at Alberta Transfer Guide main page <http://www.transferalberta.ca> or, if you do not want to navigate through few links, at <http://alis.alberta.ca/ps/tsp/ta/tbi/onlineSearch.html?SearchMode=S&step=2>

** 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: Worksheets: 12.5% Quizzes: 12.5% Midterm: 25% Final Exam: 50%

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:

1. Aug. 30 – Sept. 1	Introduction	Thurs. Aug. 31 – first day of classes
2. Sept. 4-8	Functions and Review	Monday, Sept. 4 – Labour Day
3. Sept. 11-15		
4. Sept. 18-22	Limits	
5. Sept. 25-29		
6. Oct. 2-6	Derivatives	
7. Oct. 9-13		Mon. Oct. 9 – Thanksgiving Day
8. Oct. 16-20	Applications of Derivatives	

9. Oct. 23-27	Midterm	Tues. Oct. 24 – Midterm Wed. Oct. 25 - last day to withdraw
10. Oct. 30 – Nov. 3	Applications of Derivatives	
11. Nov. 6-10		Nov. 10-13 – Fall Break
12. Nov. 13-17	Integration	
13. Nov. 20-24	Techniques of Integration	
14. Nov. 27 – Dec. 1	Applications of Integration	
15. Dec. 4-7	Review	Dec. 7 – last day of classes
Dec. 9-19		Final Exams

STUDENT RESPONSIBILITIES: Regular attendance and participation (including homework) is required for the successful completion of this course. Assignments must be handed in on time, and tests/exams must be written on the days announced in class. If an emergency prevents a student from writing a test/exam on the scheduled day, the student must contact the instructor immediately to make other arrangements. Otherwise, the student will receive a zero grade for that component of the course.

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.