



DEPARTMENT OF SCIENCE

COURSE OUTLINE – Winter 2018

MA1130 A3: Elementary Calculus I – 3 (3-2-0) UT

75 Hours for 15 Weeks

INSTRUCTOR: Dr. Shohreh Rahmati
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OFFICE HOURS: TBA

CALENDAR DESCRIPTION: The course will cover 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. Calculus: Early Transcendentals by David Guichard.

DELIVERY MODE(S): Lecture:	T, R	8:30-9:50	J204 (A3)
Seminar:	M	14:30-16:20	J204 (A3)

COURSE OBJECTIVES: This introductory calculus course is designed to introduce some basic mathematical tools and their 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 *, University of Lethbridge *, Athabasca University *
 Augustana Faculty, University of Alberta *, Concordia University College, Canadian University
 College, Grant MacEwan University, King's University College.
 Other (transfers in combination with other courses or to other institutions)

You may also check: <http://www.transferalberta.ca> or
<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 10%
- Quizzes 15%
- Midterm 25%
- Final Exam (cumulative) 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:

Ch1. PreCalculus Review, Sections 1.1, 1.2

Ch.2 PreCalculus Review, Section 2.1

Ch3. Limits & Continuity, Sections 3.1, 3.3, 3.4, 3.6, 3.7

Ch4. Differentiation, Sections 4.1-4.7

Ch5. Applications of Differentiation, Sections 5.1-5.4.1, 5.6, 5.7

Ch6. Integration, Sections 6.1-6.3

Ch7. Integration, Section 7.1

Ch8. Applications of Integration, Sections 8.1, 8.2

STUDENT RESPONSIBILITIES: Students are required to attend classes (lectures and seminars). Assignments must be submitted on time. No late assignments will be accepted. Late or missed quizzes or tests will result in mark zero unless the student provides a valid reason. No calculators, cellphones, notes or textbooks are allowed during the exams. **Cell phones are to be turned off and not used during class.**

STATEMENT ON PLAGIARISM AND CHEATING: Refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <http://www.gprc.ab.ca/about/administration/policies/>

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