Course Outline

<u>**UNIVERSITY STUDIES**</u>

MATH 1115A
Elementary Calculus II
Winter 2014

3 CREDITS
3 HOURS PER WEEK

INSTRUCTOR: Matthew Morin

Instructor Information

Name:	Matthew Morin
Phone Number:	780-791-4831
Email:	matthew.morin@keyano.ca
Office Number:	S211E
Office Hours:	Monday: 13:00 – 13:50
	Tuesday: 13:00 – 13:50
	Wednesday: 11:00 – 12:50
	Thursday: 13:00 – 13:50

Hours of Instruction

Tuesday	08:00 - 08:50	Room 214	(Lecture)
Thursday	12:00 - 12:50	Room 214	(Lecture)
Friday	11:00 - 11:50	Room 110	(Lecture)

Course Description

This course is an extension of MATH 1115, involving a study of the elementary transcendental functions and of further techniques and applications of integration. Topics include exponential and logarithmic functions, trigonometric and inverse trigonometric and further applications of integration, L'Hopital's rule and improper integrals.

Prerequisites

Math 1113.

Required/Recommended Resources

Textbook: Calculus, Early Transcendentals; James Stewart (7th edition).

Moodle: Course information will be available through Moodle.
http://ilearn.keyano.ca

WebAssign: Subscription to WebAssign (http://webassign.net/) is required for the completion of the online homework.

Recommended Resources

Calculator: No calculators allowed during tests. A scientific calculator (or graphing calculator) can be helpful for homework problems.

SKILL CENTER: Free tutoring is available on a drop-in basis at Keyano's SKILL center (Room 119). (Check with the tutors in the SKILL Center to find out when a calculus expert will be on-duty.)

More information can be found at
http://www.keyano.ca/Services/SkillCentre

Course Outcomes

The student will be able to:

1. Evaluate integrals using a variety of integration techniques including substitution, integration by parts, trigonometric substitution, partial fractions, and approximation via the Trapezoidal Rule/Simpson's Rule.
2. Express and evaluate areas, volumes, surface area, arc length, work, and centroids using integrals.
3. Recognize when a function is invertible and compute the derivative of the inverse function by relating it to the derivative of the function.
4. Recognize indeterminate forms of limits and manipulate these expression to a form in which L'Hopital's rule can be used to evaluate the limit.
5. Use the tangent line and higher-degree polynomials to approximate the values of a function.
6. Plot curves using parametric equations and use calculus to study the behavior of these curves. Specifically, convert to-and-from polar coordinates and evaluate areas and slopes of polar functions.
7. Illustrate how differential equations model natural phenomena and predict the behavior of the model by solving (or approximating a solution to) these equations.

Evaluation

Assignments	Online Problems (WebAssign)	7.5%
	Traditional Problems	7.5%
Tests	Quizzes	15%
	Midterm Examination	25%
	Final Examination	45%
Total:		**100%**

Assignments

In any mathematics course **the best way "to learn" is "to do."** The instructor can teach you about the course ideas and demonstrate the mechanics of solving the problems (and can make it look very easy), but to grow adept at solving these problems will take a lot of practice (and can at times be a struggle). Although the assignments may not count for much of your final grade *they are essential in preparing you for the types of problems you will be expected to solve on the tests*.

The online assignments will be assigned on an approximately week-by-week basis and will be weighted equally. Assignments will be completed using

WebAssign, a software program that our textbook uses. Students are responsible to pay attention in-class or check WebAssign often to keep apprised of the due dates of these assignments.

Even for these online assignments it is recommended that you work out these problems by hand (on paper) before attempting to submit your solution through WebAssign. It is strongly recommended that you keep all this written work together in a notebook so that you have it to refer to for studying purposes.

To supplement the WebAssign problems, there will be about three traditional (not online) assignments that are to be solved on paper and handed in for grading. This will give you more experience at writing out your solutions and give you more direct feedback on the quality of your work.

Tests

All tests will be written and are closed-book. No calculators are allowed, nor should they be needed. The topics covered by each test will be described in advance in-class and will be posted on Moodle. These tests are meant to test how well you have "mastered" the subject matter. Satisfactory completion of the relevant assignment problems is the very minimum amount of work that should prepare you for the types of problems that could appear on a test. Testing requires that you will need to be adept at solving these sorts of problems, so practicing the methods with additional problems is recommended.

Quizzes will be short (approximately 15 minutes) and will take place during class. Quizzes will be equally weighted, except the lowest quiz score will be dropped. The midterm exam will take place during a lecture hour (50 minutes). The final exam will be 3 hours in length and will be cumulative. The date/time of the final exam will be set near the middle of the term.

Grading System

Standing	Letter Grade	Grade Points
	A+	4.0
Excellent	A	4.0
	A-	3.7
	B+	3.3
Good	B	3.0
	B-	2.7
	C+	2.3
Satisfactory	C	2.0
	C-	1.7
Poor	D+	1.3
Min Pass	D	1.0
Failure	F	0.0

Performance Requirements

Student Attendance

Class attendance is essential for two reasons. First, class attendance is the primary way that we, as instructors, can facilitate a student's learning experience. Second, attending class is a good way to keep informed of matters relating the administration of the course (e.g., the timing of assignments and exams). Ultimately, you are responsible for your own learning and performance in this course.

As is stated in the *Student Rights and Responsibilites* section of the Credit Calendar, "**Excessive or inexcusable absences can result in a poor or failing grade, loss or reduction of sponsor allowances, and/or probation or suspension**."

Student Preparation

It is the responsibility of each student to be prepared for all classes. To get the most out of the classroom experience, students should have read the appropriate section of the textbook prior to the class that it is covered.

Students who miss classes are responsible for the material covered in those classes and for ensuring that they are prepared for the next class, including the completion of any assignments and/or readings that may be due.

Plagiarism and Cheating

Every student expects to be treated and evaluated fairly in a course. Plagiarism and cheating robs everyone of this right.

No student may submit words, ideas or data of another student or person as his or her own in any writing, project, assignment, quiz, electronic presentation, exam etc. Any work used that is not the student's own must be clearly cited as belonging to someone else. There are penalties for using other's work and not citing it. The Student's Rights & Responsibilities document clearly outlines these penalties and the appeal process.

- No learner can obtain information from another student during an exam.
- No learner can bring unauthorized information (paper or electronic) into an exam or quiz.
- No student can submit work done in another course for grading in this course without the written prior approval of the course instructor.
- No student can submit copyright protected or commercially produced materials as part or all of an assignment without proper citation & permission.

COLLEGE POLICIES

Equality, Equity and Respect

Keyano College is committed to providing an environment of equality, equity and respect for all people within the College community. All members of this community are considered partners in developing teaching and learning contexts that are welcoming to all. Faculty, staff, and students are encouraged to use inclusive language to create a classroom atmosphere in which students' experiences and views are treated with equal respect and valued in relation to their gender, ethnic and cultural background, and sexual orientation.

Students should consult:
http://www.keyano.ca/StudentLife/StudentConduct/IndividualRightsPolicy

Accommodation for Students with Disabilities

Disability Support Services: Learner Assistance Program

If you have a documented disability or you think that you would benefit from some assistance from a Disabilities Counsellor, please call or visit the Disability Supports Office 780-792-5608 to book an appointment (across from the library). Services and accommodations are intended to assist you in your program of study, while maintaining the academic standards of Keyano College. We can be of assistance to you in disclosing your disability to your instructor, providing accommodations, and supporting your overall success at Keyano College.

Specialized Supports and Duty to Accommodate

Specialized Support and Duty to Accommodate are aligned with the office of Disability Support Services: Learner Assistance Program (LAP) guided by federal and provincial human rights legislation, and defined by a number of Keyano College policies. Keyano College is obligated by legislation to provide disability-related accommodations to students with identified disabilities to the point of undue hardship.

APPROXIMATE COURSE SCHEDULE

Week	Dates	Topic	Chapter Sections
1	Jan. 6 - Jan. 10	Review of Integrals, Substitution, Area Between Curves,	Ch.5, 6.1
2	Jan. 13 - Jan. 17	Volumes, Volumes by Cylindrical Shells	6.2, 6.3
3	Jan. 20 - Jan. 24	Work/Ave. Value, Integration by Parts	6.4, 6.5, 7.1
4	Jan. 27 - Jan. 31	Trig. Integrals, Trig. Substitution	7.2, 7.3
5	Feb. 3 - Feb. 7	Partial Fractions, Strategy for Integration	7.4, 7.5
6	Feb. 10 - Feb. 14	Approximating Integrals, Improper Integrals	7.7, 7.8
7	Feb. 17 - Feb. 21 (No Classes on Monday—*Family Day*)	Review, **Midterm,** Arc Length	8.1
	Feb. 24 - Feb. 28	***Reading Week***	
8	Mar. 3 – Mar. 7	Area of Surface of Revolution, Applications	8.2, 8.3, 8.4
9	Mar. 10 – Mar. 14	Inverse Functions, Hyperbolic Functions	Notes, 3.11
10	Mar. 17 – Mar. 21	L'Hopital's Rule, Linear Approximation and Taylor Polynomials	4.4, 3.10
11	Mar. 24 – Mar. 28	Parametric Curves, Polar Coordinates	10.1, 10.2
12	Mar. 31 – Apr. 4	Areas and Lengths in Polar Coordinates	10.3, 10.4
13	Apr. 7 – Apr. 11	Modeling with D.E.'s, Directional Fields, Separable Equations	9.1, 9.2, 9.3
14	Apr. 14 – Apr. 18 (No Classes on Friday— *Good Friday*)	Models for Population Growth, Linear Equations	9.4, 9.5
	Apr. 22 – Apr. 30	**Exam Period**	

Please Note: This course outline may be modified to facilitate unforeseen time constraints. Date and time allotted to each topic is subject to change.

IMPORTANT DATES TO REMEMBER

Jan. 6	Winter semester begins for academic programs
Jan. 10	Last day to add courses for academic programs
Jan. 17	Last day to drop for academic programs Last day to withdraw from full year courses without academic penalty
Jan. 31	Last day to withdraw with a 50% refund
Feb. 17	College closed (**Family Day**)
Feb. 24 - 28	**Reading Week** (No classes for academic programs)
Mar. 7	***Last day to withdraw without academic penalty.***
Apr. 17	Last day of classes for students in Certificate, Diploma, and University Programs
Apr. 18	**Good Friday**
Apr. 22-30	**FINAL EXAM PERIOD**

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Elementary Calculus II
Winter 2014

3 CREDITS
3 HOURS PER WEEK

_____   _____
Matthew Morin, Instructor   **Date**

Reviewed and approved by:

_____   _____
Louis Dingley, Chairperson   **Date**

_____   _____
Guy Harmer, Dean   **Date**