**Course Outline**

**MATH 1113E**
**Elementary Calculus I**
**Spring 2014**

**3 CREDITS**
**8 HOURS PER WEEK**

**INSTRUCTOR:  Matthew Morin**

## Instructor Information

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|---|---|
| Name: | Matthew Morin |
| Phone Number: | 780-791-4831 |
| Email: | matthew.morin@keyano.ca |
| Office Number: | S211E |
| Office Hours: | Monday    16:00 - 17:00 |
| | Thursday   16:00 - 17:00 |

## Hours of Instruction

| | | |
|---|---|---|
| Monday | 17:30 - 21:30 | Room 112 |
| Thursday | 17:30 - 21:30 | Room 112 |

## Course Description

This course is an introduction to the differential and integral calculus of algebraic functions of a single variable. Topics include limits and continuity of functions, techniques and applications of differentiation and definition and properties of the definite integral.

## Prerequisites

Math 30-1 or equivalent.

## Required 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:

- Evaluate a variety of limits
- Apply the derivative rules to differentiate complex combinations of transcendental functions.
- Apply derivatives to solve problems involving rates of change.
- Given a formula for a function, determine the intervals where it is
    - Increasing or decreasing
    - Concave upward or concave downward

  and determine the function's
    - Maximum and minimum values
    - Points of inflection.
- Create a reasonable sketch of the function using information about its derivatives.
- Apply knowledge of derivatives to find the optimal solution to a variety of word problems.
- Explain the difference between the definite and indefinite integral.
- Use integrals to solve area problems, initial value problems, and net-change problems.
- Recognize and employ the substitution method to evaluate more complex integrals.
- Demonstrate an ability to communicate a solution using the language and theory of calculus.

## Evaluation

| | | |
|---|---|---|
| Assignments | Online Problem Sets (WebAssign) | 5% |
| | Handed-In Problem Sets | 10% |
| | In-Class Problems | 5% |
| Tests | Unit Tests (3) | 30% (10% each) |
| | Final Examination | 50% |
| **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.*

Online 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. To keep up with the material, each assignment will be typically due before the next scheduled lecture.

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 four 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.

Finally, students will be expected to participate and solve problems during class time. This will include working through worksheets, working in groups, and working on the whiteboards.

**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.

Each of our unit tests will take place during the first hour of a lecture block (60 minutes, from 5:30pm to 6:30pm). 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 | Monday, May 12<br>Thursday, May 15 | Limits | 2.1, 2.2, 2.3, 2.5, 2.6 |
| 2 | Monday, May 19<br>Thursday, May 22 | **Victoria Day (Monday)**<br>**Test 1 - Limits (Thursday, 5:30 - 6:30)**<br>Derivatives and Derivative Rules | 2.7, 2.8, 3.1 |
| 3 | Monday, May 26<br>Thursday, May 29 | Derivative Rules<br>Applications of the Derivative | 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 |
| 4 | Monday, June 2<br><br>Thursday, June 5 | **Test 2 – Derivatives (Monday, 5:30 - 6:30)**<br>Related Rates, Finding Max/Min,<br>Curve Sketching | 3.9, 4.1, 4.3, 4.5 |
| 5 | Monday June 9<br>Thursday, June 12 | Optimization,<br>**Test 3 – Derivative Applications (Thursday, 5:30 - 6:30)**<br>Antiderivatives, Integrals | 4.7, 4.9, 5.1, 5.2 |
| 6 | Monday, June 16<br><br>Thursday, June 19 | Fundamental Theorem of Calculus<br>Applications of Integrals<br>**Final Exam (Thursday, 6:30 - 9:30)** | 5.3, 5.4, 5.5 |

**_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

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|---|---|
| **May 12** | Spring semester begins for academic programs |
| **May 13** | Last day to add courses for academic programs |
| **May 15** | Last day to drop for academic programs |
| **May 19** | College closed (**Victoria Day**) |
| **May 27** | Last day to withdraw with a 50% refund |
| **May 30** | **_Last day to withdraw without academic penalty._** |
| **June 20** | End of Spring Semester |

**Course Outline**

**UNIVERSITY STUDIES**

**MATH 1113E**
**Elementary Calculus I**
**Spring 2014**

**3 CREDITS**
**8 HOURS PER WEEK**

_____          _____
**Matthew Morin, Instructor**                              **Date**

## Reviewed and approved by:

_____          _____
**Louis Dingley, Chairperson**                          **Date**

_____          _____
**Guy Harmer, Dean**                                          **Date**