Course Syllabus: Math 1010A
Introduction to Calculus
Department of Mathematics and Computer Science
University of Lethbridge, Spring 2015

Course instructor:	Dr. Sean Fitzpatrick	**Email address:**	sean.fitzpatrick@uleth.ca
Office:	UHall C540	**Course website:**	via moodle.uleth.ca
Office hours:	MWF 10:30 - 11:30 am and 1:00 - 2:00 pm		
Lectures:	MWF 4:00 - 4:50 pm in D634		

Tutorial instructor:	Dr. Alia Hamieh	**Email address:**	alia.hamieh@uleth.ca
Office:	UHall C534		
Office Hours:	TBA		
Tutorials:	TUT 01, Tuesday 4:30 - 5:20 pm in AH118		
	TUT 02, Thursday 4:30 - 5:20 pm in B756		

Course Description

This course will cover topics in both precalculus and calculus, at a more basic level than Math 1560. We will begin with a brief review of basic high school algebra and arithmetic, including solving equations and inequalities, factoring, and polynomial long division. We then revisit these concepts from the point of view of functions; in particular, we will consider linear, quadratic, polynomial, and rational functions. Topics in functions such as domain, range, and graphing will be considered. We will also cover the basics of trigonometry and trigonometric functions; time permitting, we will also consider logarithmic and exponential functions. This precalculus material will make up about two thirds of the course. We will end the course by covering some of the basics from calculus, including limits, derivatives, and curve skething.

Course Objectives

This course is intended as a bridging course for those students who want to take Math 1560 but do not have the prerequisite Alberta high school Math 31 (or an equivalent), or for those who feel that their background in algebra and trignometry is not strong enough to succeed in Math 1560. It is also suitable for students who have been out of high school for several years and need to brush up on the basics before continuing on to other university mathematics courses. By the end of this course you should have obtained the necessary proficiency in algebra, trigonometry, and functions to succeed in later university mathematics courses.

Keeping the above objectives in mind, those students who are taking this course as a (terminal) mathematics requirement for their program are advised that they will have to put up with regular references to material being covered "because you're going to need it in 1560". In many cases, students looking for a terminal mathematics course will find that Math 1510 or Stat 1770 are better suited for their needs.

Required Textbook:

Because this course covers both precalculus and calculus material, we will be using two different textbooks, one for each topic. Both textbooks are *open-source* textbooks, meaning that the original authors have made their texts freely available in an editable form. Both texts have been adapted by Sean Fitzpatrick for the Math 1010 course. The two texts are as follows:

1. *Precalculus*, version $\lfloor \pi \rfloor = 3$, by Carl Stitz and Jeff Zeager.

   Author website: http://stitz-zeager.com/

2. *APEX Calculus I*, version 3.0, by Gregory Hartman et al.

   Author website: http://www.apexcalculus.com/

The original textbooks can be obtained for free in PDF format from the authors' websites given above, but students are recommended to use the edited versions of the two books, which will be made available on our course website.

If students wish to obtain print copies of the books, they can do so at the University of Lethbridge bookstore. The combined price for the two books should be around $47.

The bookstore is making the books available as coursepacks on a print-on-demand basis, and the prices above reflect the cost of printing for the bookstore – they are making the books available to you at the lowest price they're able to get. Obtaining hard copies of the texts is recommended for studying purposes, since this allows you to highlight, write notes in the margins, etc.

Note: Once you get started in this course, it will be useful to keep in mind that the content covered in this course is probably the most commonly taught mathematics material in the world, and there are dozens (if not hundreds or thousands) of resources available online to help you learn the material.

Evaluation

Your grade will be determined according to the following table (see below for explanations of each component):

Component	Quizzes	Assignments	Tests	Final
Weight	20	20	20	40

Quizzes:

Quizzes will be held **in tutorial** every week except for the two weeks when midterms are scheduled. The quiz questions will be chosen by the tutorial instructor from a list of suggested homework questions you will be assigned every week. There will be a total of 12 quizzes. No make-up quizzes will be given; however, you will be able to drop your two lowest grades (which may include a missed quiz).

Assignments:

Assignments will be **online homework**, to be completed using WebWorK, an online homework system we're able to provide free of charge on one of the Math & CS department servers. The advantage of doing problems online is that you will get multiple attempts to solve each problem, and immediate feedback on whether your answers are correct. The WebWorK server can be accessed at http://webwork.cs.uleth.ca. Further instructions will be provided in class and on the course website.

Term Tests:

There two in-class tests. The first test will be on Monday October 19th and will cover approximately* Chapters 1-3 of the Stitz-Zeager text. The second test will be on Monday, November 16th, and will cover approximately* Chapters 4-6 of the Stitz-Zeager text.

  *The actual coverage of the two term tests will vary depending on how closely we are able to stick to the tentative schedule at the end of this syllabus.

Final exam:

There will be a standard three-hour final exam. Note that final exams are scheduled by the Registrar's Office. **Please see their website for the time and place of the exam.** The final exam will be **cumulative**, but with more weigh assigned to later topics that do not appear on either term test.

Letter grade conversions:

The percentage grades earned in this class will be converted to letter grades according to the following table:

Letter grade:	A^+	A	A^-	B^+	B	B^-	C^+	C	C^-	D^+	D	F
Minimum % required:	95	85	80	77	73	70	67	63	60	55	50	0

Course policies

Participation:

Class participation is encouraged, but not required. We will have a class discussion forum at piazza.com available through Moodle for online participation. Piazza is a Q & A forum that supports mathematical notation and allows you to post anonymously, in case you're worried about posting a bad question or wrong answer.
    Notes:

1. For large classes like this one, the average response time on Moodle is usually less than an hour. It's a great way to get confirmation or a hint if you're not sure about a homework question.

2. They have an app! It can be useful for getting notifications about new posts, but speaking from experience, it's much easier to read and write questions on a large screen.

3. There is an **equation editor** built into Piazza. To ensure that others can read and understand your post, please use the equation editor to insert correct mathematical notation.

Communication:

Communication between students and myself can take place in several ways:

- Announcements on Moodle. Any updates and reminders will be posted on Moodle and emailed to your ULeth email address.

- In person, during office hours. (Recommended, especially if you are having trouble with a concept.)

- Online discussion forum, via Piazza.com (see above).

- Email. You are welcome to email me with questions about the course, and I will do my best to answer as soon as I can. I do, however, have a few email etiquette rules:

  - Include the course number in your subject heading, and your full name in the message text. Since I teach several classes at once, this will help to ensure a prompt reply. (For example, if your email consists only of "Yo prof, when's the test?" I won't be able to give you an answer since my courses have tests at different times.)
  - Questions about how to solve a particular homework problem should be directed to the discussion forum rather than email: the discussion forum can properly display math symbols, and it's usually the case that several students will have the same question.
  - Questions that can be answered by reading this syllabus (e.g. "When's the test?") will usually not be answered in a timely fashion, and the replies will generally be grumpy/sarcastic in nature.

Warning: I have set times *during the day* when I respond to emails and questions on Piazza. Do not count on getting a timely answer from me in the evening.

Homework:

Both textbooks come equipped with plenty of practice problems. Since most of the knowledge you're trying to gain from this course is *procedural*, the best way to learn is by doing as many problems as possible. (To make sure you're doing them correctly, you may want to consider working in groups. The course instructors and the Math Help Session tutors are also useful resources for this.

Tutorials:

In addition to the regular lectures, you will have one tutorial a week, where you will have a chance to practice and discuss the coursework. The tutorials will also be used for the weekly quizzes, as mentioned above. Your tutorial instructor is Dr. Alia Hamieh.

Special arrangements:

If you are a student who has registered for accommodations with the Accommodated Learning Centre, please ensure that I am informed of the necessary arrangements as soon as possible, and please feel free to meet with me if there are any adjustments I can make to improve your learning experience.

Academic honesty:

Students are expected to be familiar with, and abide by, the rules laid out in the Academic Calendar regarding academic honesty, cheating, etc. and the penalties assessed for disregarding those rules.

Tentative course schedule

Date	Topic	Assigned Reading
September 9th	Introduction	Syllabus
September 11th	The real number system	S-Z 1.1-1.2
September 14th	Linear and absolute value equations	S-Z 1.3-1.4
September 16th	Polynomial arithmetic	S-Z 1.5-1.6
September 18th	Quadratic and rational equations	S-Z 1.7-1.8
September 21st	Radicals	S-Z 1.9
September 23rd	Cartesian coordinates	S-Z 2.1
September 25th	Relations in the plane	S-Z 2.2
September 28th	Introduction to functions	S-Z 2.3-2.4
September 30th	Fuunction arithmetic	S-Z 2.5
October 2nd	Graphs of functions	S-Z 2.6
October 5th	Transformations of functions	S-Z 2.7
October 7th	Linear and absolute value functions	S-Z 3.1-3.2
October 9th	Quadratic functions	S-Z 3.3
October 12th	Thanksgiving Holiday	No Class
October 14th	Quadratic inequalities	S-Z 3.4
October 16th	Graphs of polynomials	S-Z 4.1
October 19th	Term Test 1	Covers Chapters 1-3
October 21st	Properties of polynomials	S-Z 4.2, 4.3
October 23rd	Rational functions	S-Z 5.1
October 26th	Graphs of Rational Functions	S-Z 5.2
October 28th	Rational inequalities	S-Z 5.3
October 30th	Rational functions recap	S-Z Chapter 5
November 2nd	Introduction to trigonometry	S-Z 6.1-6.2
November 4th	The trigonometric functions	S-Z 6.2-6.3
November 6th	Trig identities	S-Z 6.4
November 9th	Graphs of trig functions	S-Z 6.5
November 11th	Remembrance Day	No class
November 13th	Introduction to limits	APEX 1.1
November 16th	Term Test 2	Covers Chapters 4-6
November 18th	Evaluating limits	APEX 1.2
November 20th	Continuity	APEX 1.3-1.4
November 23rd	Limits involving infinity	APEX 1.5
November 25th	Introduction to the Derivative	APEX 2.1-2.2
November 27th	Differentiation rules I	APEX 2.3
November 30th	Differentiation rules II	APEX 2.4
December 2nd	Extreme values	APEX 3.1
December 4th	Increasing/Decreasing functions	APEX 3.2
December 7th	Concavity	APEX 3.3
December 9th	Curve sketching	APEX 3.4
December 11th	Antiderivatives	APEX 3.5