MATH 118.02
Math for the Natural Sciences
Fall 2015 Syllabus

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Class Times: MWF 2:15-3:45 PM, Zurn Hall 207
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Course Webpage: http://math.mercyhurst.edu/∼aberardine/classes/MATH118F15.php

This syllabus is a contract. It is meant to tell you what you can expect of me, and what I will expect of you. It is a binding document you should read and understand thoroughly.

1 Course Description

This course has been designed for students who wish to take calculus, but who are not prepared for college calculus based on our mathematics placement exam and department recommendation. Topics will include fundamental concepts of college algebra, pre-calculus, and a preparation for calculus. More specifically, the topics will include factoring, integer and rational exponents, simplifying algebraic expressions, function notation, polynomial and rational functions. While many of the topics covered are similar to those in a typical college pre-calculus course, there is more theoretical coverage and emphasis, a much faster pace is maintained, a greater depth of understanding is required, and additional material on applications is taught. 4 credits.

Prerequisites: MATH 112 or equivalent.

As stated above, this course is designed to help students fill in knowledge gaps/holes before enrolling in college calculus. It will move at a fast pace and assume students have taken one or more classes covering intermediate algebra and trigonometry prior to this course.

2 Course Learning Goals and Objectives

Upon successful completion of this course a student will be mathematically prepared to succeed in a college calculus course, and subsequent science courses. In particular, upon successfully completing this course, you will:

- be able to demonstrate a working knowledge of the basics of the language of mathematics,
- have acquired study habits necessary for continued success in your subsequent science and mathematics courses,
- be able to apply your understanding of algebra as required in both calculus and applications in sciences,

- organize all of your mathematical tools, techniques, procedures, and problem solving skills further developed in this course. This will enable you to utilize the appropriate tools to restate, setup, and then solve problems in calculus and beyond,
- continue to develop your mathematical skills and thought processes subsequent to this course, given the solid foundation you built in this course.

The following course objectives detail how the specific content of this course will support the Core Learning Outcome of Quantitative and Scientific Reasoning.

- Use algebraic skills including: factoring, integer and rational exponents, simplifying algebraic expressions, solving equations and inequalities.
- Display a working understanding of basic trigonometry, function notation, polynomial and rational functions, exponential and logarithmic functions, trigonometric and inverse trigonometric functions, graphs of functions.

3   Required Resources

Textbook: *Precalculus Essentials*, 4th Edition, by Robert Blitzer.

Calculators are not required for the course. In fact, they are not recommended. Calculator usage will not be permitted on any quizzes, and calculator usage will be severely limited on exams. See Section 7 of the syllabus for details.

4   Grading

Final Grade Calculation:

	Percentage of Final Grade
Quizzes	20%
In-Class Exam Scores	15% each
Final Exam	20%

Letter Grade Scale:

If you have a weighted average of at least:	94%	90%	84%	78%	70%	65%	60%	0%
then you will earn a(n):	A	B+	B	C+	C	D+	D	F

Grade Assignment: Student grades will be determined based solely on the evaluation criteria listed in this section of the syllabus. Grades reflect proficiency in the course content as demonstrated on the graded evaluation criteria. In particular, if you want to earn an A, you need to demonstrate consistent excellence over the course of the entire term; an A on the final is not equivalent to an A in the course.

5   Homework

As you'll notice in the final grade weights given above, homework does not count separately toward your final grade in the course. Practice is an important part of learning and understanding mathematics. As such, a list of optional homework assignments (practice problems) has been posted to the course webpage. Your work will not be collected. However, working through these problems is the key to your success in this class. It is expected that you will spend approximately 8-12 hours per week studying the material outside of class meetings according to the typical 2-3 hours per credit rule of thumb.

6   Quizzes

We will have a quiz every Friday that class is held (and that is not an exam day) beginning September 4 and ending November 13. There will also be a quizzes on Wednesday, November 18; Wednesday, December 2; and Friday, December 4, for a total of 12 in-class quizzes. Your lowest two quiz scores will be "dropped" when computing your final grade. You will not be permitted to use calculators on quizzes. No extensions or make-ups will be given for in-class quizzes.

Quiz problems will come from the homework problems marked as "for quizzes" on the homework list. Each of the first 10 quizzes will consist of 1-5 problems. Quiz 6 and Quiz 10 will focus on topics in trigonometry. Quizzes 1-5 and 7-9 will focus on topics in algebra. The final two quizzes will be cumulative and have up to 15 problems each.

7   Exams

There are four in-class exams scheduled for this semester.
Exam 1: (Chapters P and 1) Wednesday, September 23rd
Exam 2: (Chapter 2) Monday, October 12th
Exam 3: (Chapter 4) Monday, November 2nd
Exam 4: (Chapters 3 and 5) Friday, November 20

Final Exam: The final exam is scheduled for Friday, December 11th at 1-3PM. It will be comprehensive, covering material from Chapters P-6.

In-Class Exams: In-class exams will not be multiple choice and you will be required to show your work to get credit. You will not be permitted to use calculators on Exam 1, Exam 2, or Exam 3. For Exam 4 and the Final Exam, there will be a portion of each exam for which a scientific or four-function calculator will be permitted but not required. Exam problems that may appear on the "calculator sections" of these exams are listed separately on the homework document. Graphing calculators will not be permitted on any exam.

During class I will clearly indicate what I consider to be a complete solution, and what is "enough work." My expectations will be clear, and if you need further clarification you can ask questions in class or visit during office hours. You should be sure to emulate the standards modeled in class to receive full credit on in-class exams.

Make-Up Exams: No make-up exams will be given. If you know you are going to miss a scheduled exam for a pre-scheduled event (examples: Mercyhurst-operated sporting event, academic event for another Mercyhurst course, doctor's appointment, wedding, etc.), you must contact me via e-mail or in office hours at least seven days before the exam is scheduled to take place to arrange to take the exam early. That is, you may arrange to take the exam <u>prior</u> to the scheduled date and time, but you may not make an exam up after it has been administered in class. If you miss an in-class exam, you will receive a zero.

Exam Grading: As shown in Section 4 of the syllabus, each exam counts for 15% of your final grade in the course. Your lowest exam grade will be replaced by your final exam, if your final exam score is higher than your lowest in-class exam grade. A zero received from a missed exam may be replaced by the final, no questions asked. If you miss more than one exam, only one of your zeros will be replaced by the final exam.

8 Course Policies

Attendance: Students are responsible for all information (notes, announcements, etc.) given in class, regardless of attendance.

E-mail: You can always e-mail me with course-related questions or to request an appointment outside of office hours. However, you should allow up to 2 days for a reply to your e-mail. Also, you should not e-mail me with questions about your grade; to discuss your grade please meet with me in person in my office. E-mail is not a substitute for class attendance. Sometimes, I will need to send out e-mail communications to the class. These communications will be sent to your Mercyhurst account. I will not send to any other e-mail account you may use, so be sure you have access to your Mercyhurst account and check it often enough to receive these important announcements in a timely manner.

Classroom Etiquette: Please be courteous to the instructor and your fellow students and silence your cell phone before class and do not send or receive calls or text messages during class time. Take off your headphones; do not read the newspaper or other books. Avoid disrupting the instructor and your classmates by arriving to class late or leaving class early unless absolutely necessary.

Course Assistance and Tutoring: If you need assistance, ask for it! I have office hours every week, and the Department of Mathematics offers free tutoring for MATH 118 students. See http://math.mercyhurst.edu/~griff/courses/Tutoring/ for details, including the schedule.

Regarding Learning Differences: In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences Program secretary at 824-3017, to arrange a confidential appointment with the director of the Learning Differences Program during the first week of classes.

Support of the Mercy Mission: This course supports the mission of Mercyhurst University by creating students who are intellectually creative. Students will foster this creativity by: applying critical thinking and qualitative reasoning techniques to new disciplines; developing, analyzing, and synthesizing scientific ideas; and engaging in innovative problem solving strategies.

9 Course Schedule

Week of	Class Dates	Material to be Covered	Special Events
8/23	8/26, 8/28	P1-P3	None
8/30	8/31, 9/2, 9/4	P4-P9, 1.1	Quiz 1 on Friday
			Add/drop deadline Wednesday
9/6	9/9, 9/11	1.2-1.3	Quiz 2 on Friday
9/13	9/14, 9/16, 9/18	1.4-1.8	Quiz 3 on Friday
9/20	9/21, 9/23, 9/25	1.9, 2.1, 2.2	Exam 1 on Wednesday
			Quiz 4 on Friday
9/27	9/28, 9/30, 10/2	2.3-2.6	Quiz 5 on Friday
10/4	10/5, 10/7, 10/9	2.7, 2.8	N/A
10/11	10/12, 10/14	4.1, 4.3	Exam 2 on Monday
10/18	10/19, 10/21, 10/23	4.2, 4.4-4.6	Quiz 6 on Friday
10/25	10/26, 10/28, 10/30	4.7, 4.8	Midsemester grades due Monday
			Quiz 7 on Friday
11/1	11/2, 11/4, 11/6	3.1-3.4	Exam 3 on Monday
			Quiz 8 on Friday
11/8	11/9, 11/11, 11/13	3.5, 5.1-5.4	Quiz 9 on Friday
11/15	11/16, 11/18, 11/20	5.5	Quiz 10 on Wednesday
			Exam 4 on Friday
11/22	N/A	N/A	Thanksgiving Break
11/29	11/30, 12/2, 12/4	6.3, 6.5	Quiz 11 on Wednesday
			Quiz 12 on Friday
			Last day to withdraw Friday
12/6	N/A	N/A	Final Exam Friday 12/11 1-3PM

Final Note: This syllabus is subject to change if deemed necessary. Any syllabus changes or addendum will be communicated in class.