Math 115 :: Syllabus :: Winter 2015

This is the syllabus for Precalculus classes Math 115-01 and Math 115-02. Here you'll find information on prerequisites, grading policy, homework, study resources and a tentative course schedule. See the box in the upper right for more links and information for the course.

Textbook

The (required) textbook we will use for this course is Precalculus - Mathematics for Calculus by J. Stewart, L. Redlin, and S. Watson. I will use the Fifth Edition, which is available at the University Bookstore. It is pictured below along with a link to places to buy it on the web. Other editions will be very similar, but the exercises will occasionally differ. If you have a different edition, find a friend with the fifth edition to make sure the exercises you work match your friend's. This is an excellent, if lengthy, text and is carefully written with clear explanations. It motivates well the subject and has lots of examples. Try to get the fifth edition as 20% of the exercises in this edition or new.

Classroom

Class will be held, unless otherwise noted, at the following days & times.

- Math 115-01 :: JXJ 3100 :: 10:00 - 10:50 am :: MWTF
- Math 115-02 :: WEST 1705 :: 1:00 - 1:50 pm :: MWTF

Your daily attendance is required. I will record attendance and you are expected to come to class daily, to be fully awake, to pay attention to and participate in the class discussion. I will do my part to make class something you look forward to rather than dread.

Office Hours

I am often in my office JXJ 2226, you are free to stop by and see if I am available. My official office hours are:
- Monday: 2pm - 3pm
- Wednesday: 2pm - 3pm
- Thursday: 11am - 12am, 2pm - 3pm
- Friday: 2pm - 3pm

**Grading**

- Homework 25%
- Team Quizzes 5%
- Exams 45% (4 @ 11.25% each)
- Final 25%

**WeBWork**

Homework will be administered via WeBWork, and is due each Monday at 8am. Any additional written homework will be turned in on Thursday. Learn how to use WeBWork immediately! Help can be found here.

**Quizzes**

Unannounced team quizzes will be given on occasion.

**Exams**

- Exam 1 - January 30
- Exam 2 - February 27
- Exam 3 - March 27
- Exam 4 - April 17
- Final - (MA115-01) Tuesday, April 28, 10am - 11:50am
- Final - (MA115-02) Wednesday, April 29, 12pm - 1:50pm
- We follow NMU's Final Exam Schedule. Make sure that you will be able to attend the exams at the given dates and times. Exceptions can only be accepted in case of time conflicts with other courses, or serious illness with a physician's certification.

**Prerequisites**

You need either:

- C- or better in MA111
- B- or better in MA 104
- a satisfactory score on the Math Placement Exam.

**Calculators**

Calculators and graphing software will often be used in class and will be allowed on **Some** exams and quizzes. Unless otherwise notified, you are **not allowed to**
have any information saved in your calculators during quizzes and exams. You are not required to have a calculator: there are many free online graphing calculators available. [FooPlot.com, DesMos.com]

Laptops & Phones

Do not use your laptop, phone or electronic media device in class unless instructed to do so.

Other Resources

There is an dizzying array of supporting materials for this textbook in particular, but many cost money. The link on the right College Algebra Resources contains links to mostly free sites & documents that will help you get off on the right foot. Both free and paid tutoring is available, in the tutoring lab in NSF 3810.

Here's the Tutor Lab Schedule

Outcomes & Assessment

Upon successful completion of this course students will be able to:

- Manipulate mathematical expressions.
- Apply mathematical models to solve contextualized problems.
- Recognize and analyze the natural functions and their properties.
- Construct graphs of functions and interpret the results.

Evaluation of these learning outcomes will be done through a mix of assignments, class exercises, projects, research papers, group work, written & oral quizzes and tests.

Course Description

The first two weeks of the course we will learn some fundamental concepts and how they are used. It is very important to get a firm grasp on the fundamentals. We will cover the first 7 chapters of the textbook.

Chapter 1 :: Fundamentals :: Weeks 1 & 2

- Real numbers: From small to large, they are used model to world.
- Algebraic expressions: Like a phrase in English, they convey a controlled sense of the unknown.
- Coordinate geometry: Like a GPS.
- Modeling using equations: How science gets done.

Chapter 2 :: Functions :: Weeks 3 & 4
• **Dynamics**: Functions are a way of expressing dependence between two distinct things.
• **Qualitative behavior**: Functions can be compared and transformed into one another.
• **Visualizing Functions**: We can **see** the effect of functions.

**Chapter 3 :: What kind of functions are there? :: Weeks 5 & 6**

• **Polynomial**: Basic building block functions, easy to describe and useful to use.
• **Rational**: Ratios of polynomial functions.
• **Exponential**: How money grows, decay happens and learning occurs.
• **Logarithmic**: Explosion followed by bounded growth.

**Chapter 4 :: Exponential & Logarithmic Functions :: Weeks 9 & 10**

• **Exponentials**: We will learn how the exponential and logarithmic functions relate.
• **Logarithms**: We will demonstrate the algebraic properties of these functions.
• **Laws of Logs**: We will collect these algebraic properties into formal laws.
• **Modeling**: We will describe natural phenomena in terms of these functions.

**Chapter 5 :: Trig Functions of Real Numbers :: Weeks 11 & 12**

• **Unit Circle Love**: The ferris wheel of math.
• **Trig Functions of real numbers**: What note is that violin playing?
• **Trig graphs**: Graphs of trig functions will help us understand the seasons.

**Chapter 6 :: Trig Functions of Angles :: Weeks 13 & 14**

• **Angle Measure**: What does bicycling have to do with angle measure?
• **Right Angle Trig**: How tall is that building and how high is that tree?
• **Trigonometric functions of angles**: How fast can we sled down that hill?

**Chapter 7 :: Analytic Trigonometry :: Weeks 13 & 14**

• **Trig Identities & Formulae**: Tricks to figure out where to sit at the Movies.
• **Problem Solving**: What trig has to do with the waves of Lake Superior.

**Natural Sciences Requirement**

This course satisfies the Foundation of Natural Sciences/Mathematics requirement. Students who complete this course should be able to demonstrate a basic understanding of mathematical logic; use mathematics to solve scientific or mathematical problems in college classes; express relationships in the symbolic language of mathematics; and appreciate the role of mathematics in analyzing natural phenomena.

**University Policies**
**Academic Honesty:** Cheating is not only unethical and pathetic, but is a violation of the Northern Michigan University [Student Code and University Policy](#) and grounds for your dismissal from the University.

**Discrimination & Harassment:** Northern Michigan University does not unlawfully discriminate on the basis of race, color, religion, national origin, gender, age, height, weight, marital status, handicap/disability, sexual orientation or veteran status. If you have a civil rights inquiry, contact the [Affirmative Action Office](#) at 906-227-2420.

**Americans with Disabilities Act Statement:** The University seeks to provide equal access to its programs, services and activities for people with disabilities. If you have a need for disability-related accommodations or services, please inform the Coordinator of [Disability Services](#) in the Dean of Students Office at 2001 C. B. Hedgcock Building (227-1700) at 906-227-1700 as soon as possible. Reasonable and effective accommodations and services will be provided to students if requests are made in a timely manner, with appropriate documentation, in accordance with federal, state, and University guidelines.

**The Registrar:** Withdrawing from any course or any matters relating to registration are the responsibility of the student. For more information regarding this topic, check out the [Registrars Website](#).