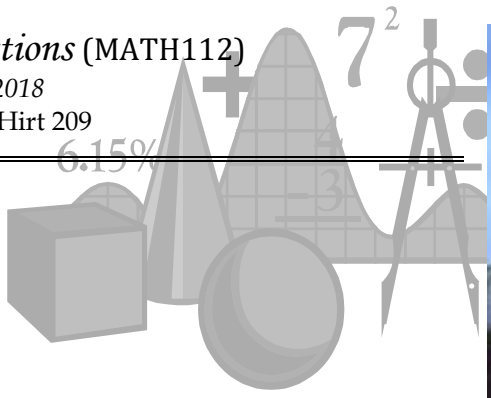
Trigonometry and Functions (MATH112)
Spring Term 2018
TTh 11:00-12:15, Hirt 209



Professor:	Patrick M. Kelly	
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E-mail:	pkelly@mercyhurst.edu	
Office Hours:	Mondays:	12:30-2:00
	Tuesdays:	9:00-10:30
	Wednesdays:	12:30-2:00
	Fridays:	12:30-2:00

Meeting times by appointment may be arranged as well.

Other Information:

This course is registered on *Blackboard*, an academic software package set up on the Mercyhurst intranet. You may access information about the course via *Blackboard* at any time from any computer. Please check that the e-mail address listed for you on *Blackboard* (most likely your Mercyhurst account) is the account that you use regularly. Please change it on *Blackboard* if this is not the case.

Text:

Precalculus (6th edition), by Bob Blitzer
Pearson Publishing, ISBN 978-0-13-446914-0

Calculator:

A calculator is not required for this course, but some students may find the assistance of one—particularly a graphing calculator—to be useful when learning some of the concepts. Please note, though, that if you choose to use a calculator to facilitate your learning, you need to be sure that the calculator does not become a crutch. That is, you need to make sure you understand the concepts independently of the calculator, and that you can perform the skills learned in the course without having to rely on the calculator.

Be aware that during most of the quizzes and exams, calculators will not be permitted. If a calculator will be permitted for a quiz or exam, this will be announced well in advance of the exam so that you may plan accordingly. If no announcement is made about a calculator for an upcoming quiz or exam, this will mean that the default rule will be in effect: no calculators.

Course Content:

This is a course in trigonometry and precalculus, similar to high school courses in algebra II/trigonometry and precalculus, except that the pace will be faster. We will begin with a review of the function concept and some specific families of functions, and proceed into graphs, zeros, and other aspects of functions. The latter portion of the course will focus on trigonometric functions, including graphs, identities, formulas and laws that involve these functions.

Course Objectives:

At the conclusion of this course, the student should be able to:

1. determine domain of mathematical expressions and functions and solve equations involving elementary functions;
2. recognize trigonometric functions and know how to use them;
3. use analytical trigonometry to derive trigonometric identities from basic identities, and solve trigonometric equations; and
4. translate the written problem and create trigonometric models and functions to solve real-life problems.

Grading:

Your final course grade will be compiled from several factors. Homework assignments, quizzes, four in-class exams, and the cumulative final exam will be considered for the course grade calculation. The breakdown for each component is as follows:

six hand-in homework assignments, 10 points each = 60 points
eight quizzes, 20 points each = 140 points (lowest score dropped)
four exams, 100 points each = 400 points
final exam, 150 points
total: 750 points

Course grades will be determined using the following scale:

A	672-750 points (90-100%)	B+	649-671 points (87-89%)
B	597-648 points (80-86%)	C+	574-596 points (77-79%)
C	522-573 points (70-76%)	D	447-521 points (60-69%)
F	0-446 points (below 60%)		

Homework:

Homework in a mathematics class is a must! Selected problems from each section lectured on in class will be assigned as suggested exercises. I will not be checking these problems, they are your responsibility to do and understand (I *am* available for even the most trivial of questions. . . .). Six Hand-in Homework assignments will be given throughout the term as well, each worth 10 points toward your final course score.

Quizzes:

Quizzes will be used as an assessment of your understanding of the material and your progress in the course. Quizzes will be held eight times during the term, as (mostly) slated on the course schedule on the last pages of this syllabus.

Six quizzes are included in the schedule on this syllabus; the other two will be unannounced. If you are absent (excused or unexcused) on the day of an unannounced quiz, you will receive a zero for that quiz—there are no make-up opportunities for these quizzes.

At the end of the semester, your lowest quiz score will be dropped.

A Few Policies:

- You are responsible for all that is covered (including announcements) in class even if you are absent.
- If you miss a quiz or an exam, a make-up is only considered when (a) notice is given (when possible) prior to the missed assessment, (b) there is a valid reason for missing, and (c) **the make-up assessment is completed prior to the next class session**.
- Office hours are not for re-teaching lessons or catching you up on something you missed.
- You are responsible for all the material in a given section unless told otherwise. Use the course schedule and suggested homework as a guide.
- A prerequisite for additional help outside the classroom is regular class attendance.

Cell Phones:

Before each class session begins, please try to remember to turn your phones off so as not to cause a disruption during class (and do realize that even the sound of a vibrating phone can be disruptive). Furthermore, cell phones are not permitted at all during exam situations (quizzes and tests).

Services:

Tutoring

Free tutoring sessions for several different mathematics courses—including Trigonometry & Functions—are available to you. These sessions adhere to the following schedule:

Day	Time	Room
Monday	6:00-8:00	Zurn 213
Tuesday	6:00-8:00	Zurn 213
Thursday	6:00-8:00	Zurn 213

No appointment is necessary; just walk on in! Below is a link to their website:
http://math.mercyhurst.edu/~griff/courses/Tutoring/
You are strongly encouraged to utilize this tutoring service if you find yourself in need of some extra assistance.

Learning Differences

In keeping with college policy, any student with a disability who needs academic accommodations must call Learning Differences at 824-3017 or stop by Old Main room 314, to arrange a confidential appointment with the Disability Services Director during the first week of classes.

(Tentative) Course Schedule:

Day	Section	Material
Tuesday, 1/16		Intro to the course;
	§1.2;	Basics of Functions and Their Graphs;
	§1.3	More on Functions and Their Graphs
Thursday, 1/18	§1.4;	Linear Functions and Slope;
	§1.5;	More on Slope;
	§1.6	Transformations of Functions
Tuesday, 1/23	§1.7;	Combinations of Functions; Composite Functions;
	§1.8	Inverse Functions
Thursday, 1/25Quiz #1	§2.1;	Complex Numbers;
	§2.2	Quadratic Functions
Tuesday, 1/30	§2.3	Polynomial Functions and Their Graphs
Thursday, 2/1 Quiz #2	***Exam #1***	
Tuesday, 2/6	§2.4;	Dividing Polynomials; Remainder and Factor Theorems;
	§2.5	Zeros of Polynomial Functions
Thursday, 2/8	§2.6	Rational Functions and Their Graphs
Tuesday, 2/13	§2.7	Polynomial and Rational Inequalities
Thursday, 2/15	§3.1;	Exponential Functions;
	§3.2	Logarithmic Functions
Tuesday, 2/20 Quiz #3	§3.3;	Properties of Logarithms;
	§3.4	Exponential and Logarithmic Equations
Thursday, 2/22	***Exam #2***	
Tuesday, 2/27 Quiz #4	§4.1;	Angles and Radian Measure;
	§4.2	Trigonometric Functions: The Unit Circle
Thursday, 3/1	§4.3;	Right Triangle Trigonometry;
	§4.4	Trigonometric Functions of Any Angle
Tuesday, 3/6	*Spring Break—no classes!*	
Thursday, 3/8		
Tuesday, 3/13 Quiz #5	§4.5	Graphs of Sine and Cosine Functions
Thursday, 3/15	§4.6	Graphs of Other Trigonometric Functions
Tuesday, 3/20	§4.7	Inverse Trigonometric Functions
Thursday, 3/22	§5.1;	Verifying Trigonometric Identities;
	§5.2	Sum and Difference Formulas
Tuesday, 3/27	***Exam #3***	
Thursday, 3/29	*Easter Break—no classes!*	
Tuesday, 4/3	§5.3	Double-Angle, Power-Reducing, and Half-Angle Formulas
Thursday, 4/5	§5.4	Product-to-Sum and Sum-to-Product Formulas
Tuesday, 4/10 Quiz #7	*Advising Day—no classes!*	
Thursday, 4/12	§5.5	Trigonometric Equations
Tuesday, 4/17	§6.1;	The Law of Sines;

	§6.2	The Law of Cosines
Thursday, 4/19	§6.3; §6.4	Polar Coordinates; Graphs of Polar Equations
Tuesday, 4/24	§6.5	Complex Numbers in Polar Form; DeMoivre's Theorem
Thursday, 4/26	***Exam #4***	
Tuesday, 5/1	§9.1; §9.2	The Ellipse; The Hyperbola
Thursday, 5/3	§9.3;	The Parabola; Review/Catch-Up
Tuesday,5/8 at **10:30**	***Final Exam***	