

MATH 128: TRIGONOMETRY

Spring 2018

Instructor: Ryan Hansen

Course Materials:

- (1) **You are required** to purchase a MyLabsPlus student access code for *A Graphical Approach to Algebra and Trigonometry*, by Hornsby, Lial, and Rockswold. With the MyLabsPlus code, you will have access to the eBook via the MyLabsPlus website. You may elect to receive a physical copy of the book along with the MyLabsPlus supplement (which includes the eBook) as a package, if you choose. MyLabsPlus will be used for the course's assessments and an online bank of additional practice problems will be available to you.
- (2) **No calculators will be allowed on the first three exams.** The Windows calculator will be provided on Exam 4 and the Final Exam, however, **the only physical calculator allowed on Exam 4 or the Final Exam is the Texas Instruments TI-30X IIS 2-Line Scientific Calculator. No other calculators will be allowed on any exams.**

Classroom: All lectures meet on Mondays & Wednesdays

Section 001 meets from 9:30 – 10:20 in 209 ARM

Section 003 meets from 10:30 – 11:20 in 209 ARM

Section 004 meets from 11:30 – 12:20 in G-24 EIE

Labs: All labs meet on Fridays in either 215 or 421 Armstrong.

You must attend during the lab session for which you registered.

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Course Coordinator: Ryan Hansen

Office: 307-D Armstrong Hall

Email: rhansen@mail.wvu.edu (best)

Office hours: Monday 12:30 pm – 2:15 pm

Wednesday 12:30 pm – 2:15 pm

Other hours may be available by appointment

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Policy Issues: All attendance, make-up, and other issues should be directed primarily to the Course Coordinator. See his contact information above.

Pre-requisite: One of the following criteria must be satisfied in order for you to be in this course

- A grade of C- or better in Math 126A or Math 126B.
- A grade of C- or better in Algebra (MATH 126 equivalent) from another college.

Objectives: After completing this course, the student will be able to:

- choose the appropriate interpretation of function (algebraic, graphic, and numeric), especially for trigonometric functions arising from the study of circular motion
- apply right angle trigonometry and trigonometric functions of general angles to relevant problems
- model with trigonometric and inverse trigonometric functions
- solve trigonometric equations and inequalities analytically, approximately, and graphically
- utilize trigonometric identities to simplify expressions
- make use of trigonometric identities to develop exact values of trigonometric ratios of non-special angles
- interpret graphs of trigonometric and inverse trigonometric functions and define their domains and ranges
- utilize the Law of Sines and Law of Cosines to solve problems related to oblique triangles
- formulate and solve problems using vectors and the polar coordinate system

To accomplish these goals, the class incorporates interactive laboratories using technology and student activities that emphasize writing and student cooperation as integral parts of the class. The student will complete laboratory activities utilizing technology and working with a partner to solve application problems where they will demonstrate the above skills. For instance, a lab during the chapter on trigonometric identities explores how identities are manifest in the behavior of the graphs of trigonometric functions. Students will be evaluated on their ability to convert relevant information from equations to graphs, explain this information, express quantitative evidence in support of the relationship, and draw appropriate conclusions based on their analysis.

This course fulfills the WVU General Education Foundations Objective for F3 Mathematics and Quantitative Skills.

Calculators: You are allowed to use any calculator on the homework and labs. The Windows calculator will be provided on Exam 4 and the Final Exam, however, **the only physical calculator allowed on Exam 4 or the Final Exam is the Texas Instruments TI-30X IIS 2-Line Scientific Calculator. No other calculators will be allowed on any exams.**

Evaluation: Multiple forms of assessment will be used to measure your progress in understanding trigonometry. You will accumulate 1000 points for the course by the following distribution:

Assessment	Points
Lecture Attendance	50
MyMathLab assignments	150
Exams (total of 4)	125 each
Comprehensive Final	200
Labs (completed only in lab on Fridays)	100
Bonus Quizzes (Lectures 6-25)	1 each

GRADING SCALE: 895 pts is the lowest A, 795 the lowest B, etc.

- Attendance will be tracked in most lectures and labs with no prior notice. All absences are treated the same whether University excused or not. If you forget to check-in, you do not demonstrate active participation worthy of points for that day. All students are awarded the full points for the first week of classes to accommodate schedule changes. A student may miss up to 3 check-ins before affecting the attendance grade.
- MyLabsPlus assignments (online homework problems based on material covered in lectures) will open at 8:00 am each lecture date and be due by 8:00 am on the following class date (ie. 48 hours). Assignments will then remain open for 70% credit until 8:00 am on the day of the exam covering their material or 5 days after the due date, whichever is longer. There are no other homework extensions for any reason.
- Exams are computer based and take place on Fridays, as per the schedule included. **You must achieve a 50% average on each homework related to each exam to be permitted to take the exam, no exceptions. No calculators will be allowed on the first three exams.** All personal items must be placed out of reach when testing. Cell phones must be powered off and placed in the clear box behind the monitor, with any other electronic devices and all watches. There will be no exceptions to this rule. **Violations will result in a UF for the course.** Questions may be any of several types: multiple choice, short answer, matching, or true-false. Questions are drawn from topics covered during lectures, in assigned reading or videos, in MyLabsPlus assignments, or from laboratory work.
- There are no Make-up exams in this course. If an exam is missed for any reason, the grade will be zero. Those providing official University letters for missed exams after the first may be accommodated on a case-by-case basis.
- The Final Exam will take place on Wednesday, May 2nd. The format of the final exam is the same as that of the other exams. You will register for a time slot 1-2 weeks before the final exam. **The Final Exam percentage will replace the lowest regular exam percentage if that is beneficial (this includes a zero assigned for missing an exam).**
- Labs will use the MyLabsPlus system and take place on the Fridays when there is no exam. Labs are cooperative, guided explorations of topics covered in lectures, built on interactive computer activities. The lab period is used to reinforce course ideas with interactive activities connected with current topics. For instance, the lab during the chapter on trigonometric identities explores how identities are manifest in the behavior of graphs of trig functions. The Lab can only be worked in the Mathematics Laboratory and must be submitted by the following Tuesday at the close of the open lab hours for the Mathematics Laboratory in Armstrong 215. **The only exceptions** are Lab 1 which is due on Friday, January 19th at the close of the open lab hours for Armstrong 215; Lab 2, due on Thursday, January 25th; and Lab 8, due on Thursday, April 5th at 11:59 pm.
- Bonus Quizzes for Lectures 6-25 will open at 8:00 am one week before the exam covering that material and close the day of the exam at 8:00 am. You may receive a maximum of 1 point for each bonus quiz, receive partial credit, and take unlimited attempts at each bonus quiz, however, only the highest score counts.

HELP: On an average, you should expect to spend at least **six hours per week** outside of class and lab time working on this class. If you are spending more, then you may need to seek help. There are several excellent sources for such help.

First, seek help from your classmates. Often they can explain the problem clearly since they have been working on it.

Second, seek assistance from your instructor. A few well-asked questions may clarify the problem.

Third, seek help from the Math Learning Center in Armstrong 301 or go to the Mathematics Lab open lab hours in 215 Armstrong.

The West Virginia University community is committed to creating and fostering a positive learning and working environment based on open communication, mutual respect, and inclusion.

If you are a person with a disability and anticipate needing any type of accommodation in order to participate in this class, please advise me and make appropriate arrangements with the Office of Accessibility Services (293-6700). For more information on West Virginia University's Diversity, Equity, and Inclusion initiatives, please see <http://diversity.wvu.edu>.

West Virginia University (WVU) does not tolerate sexual misconduct, including harassment, stalking, sexual assault, sexual exploitation, or relationship violence [BOG Policy 44]. It is important for you to know that there are resources available if you or someone you know needs assistance. You may speak to a member of university administration, faculty, or staff, but keep in mind that they have an obligation to report the incident to the Title IX Coordinator. If you want to speak to

someone who is permitted to keep your disclosure confidential, please seek assistance from the **Carruth Center, 304-293-9355** or **304-293-4431** (24-hour hotline), and locally within the community at the **Rape and Domestic Violence Information Center (RDVIC), 304- 292-5100** or **304-292-4431** (24-hour hotline).

For more information please consult WVU policies at <http://titleix.wvu.edu>.

The integrity of the classes offered by any academic institution solidifies the foundation of its mission and cannot be sacrificed to expediency, ignorance, or blatant fraud. Therefore, I will enforce rigorous standards of academic integrity in all aspects and assignments of this course. **For these reasons, reporting of any behavior suspected to be in violation is strongly encouraged, confidential and will be scrutinized.** For the detailed policy of West Virginia University regarding the definitions of acts considered to fall under academic dishonesty and possible ensuing sanctions, please see the Student Conduct Code at <https://studentconduct.wvu.edu/campus-student-code>. Should you have any questions about possibly improper research citations or references, or any other activity that may be interpreted as an attempt at academic dishonesty, please see me *before* the assignment is due to discuss the matter.

Furthermore, in order to support the integrity of the courses offered by the Mathematics Department an examination policy has been adopted that will apply to this course. It will be distributed on the first day of classes, posted on the course homepage and emailed to all students in the course.

In the event of inclement or threatening weather, everyone should use his or her best judgment regarding travel to and from campus. Safety should be the main concern. If you cannot get to class because of adverse weather conditions, you should contact me as soon as possible. Similarly, if I am unable to reach our class location, I will notify you of any cancellation or change as soon as possible (by 7:30 am/2 hours before class starts), using MIX, to prevent you from embarking on any unnecessary travel. If you cannot get to class because of weather conditions, I will make allowances relative to required attendance policies, as well as any scheduled tests, quizzes, or other assessments.

All course materials, including lectures, class notes, quizzes, exams, handouts, presentations, and other materials provided to students for this course are protected intellectual property. As such, the unauthorized purchase or sale of these materials may result in disciplinary sanctions under the Campus Student Code.

Math 128 – Spring 2018 General Schedule

1/8: Lecture 1, <i>Introduction & Angles</i> (§8.1, §8.3)	3/5: Lecture 15, <i>Inverse Trig Functions Cont.</i> (§9.4)
1/10: Lecture 2, <i>Radian Conversion, Arc Length, & Sectors</i>	3/7: Exam 3 Review
	Evening Review Session
1/12: Lab 1, <i>Angles</i> (§8.1)	3/9: Exam 3 (Lectures 11–15)
1/15: Martin Luther King, Jr. Day Recess	3/10 – 3/18: Spring Recess (No Classes)
1/17: Lecture 3, <i>Calculating Trig Functions</i> (§8.2–8.3)	3/19: Lecture 16, <i>Trigonometric Equations & Inequalities (Part 1)</i> (§9.5)
1/19: Lab 2: <i>The Speed Trap</i>	3/21: Lecture 17, <i>Trigonometric Equations & Inequalities (Part 2)</i> (§9.6)
1/22: Lecture 4, <i>Solving Right Triangles</i> (§8.4)	3/23: Lab 7: <i>Trigonometric Equations</i>
1/24: Lecture 5, <i>More Properties of Trig Functions</i> (§8.5)	3/26: Lecture 18, <i>The Law of Sines</i> (§10.1)
1/26: Exam 1 (Lectures 1–5)	(10/24: Last Day To Drop A Class)
1/29: Lecture 6, <i>Trigonometric Graphs</i> (§8.6)	3/28: Lecture 19, <i>The Law of Cosines</i> (§10.2)
1/31: Lecture 7, <i>More Trigonometric Graphs</i> (§8.7)	3/30: Lab 8: <i>General Triangles & Area of Triangles</i>
2/2: Lab 3: <i>Sine Wave Geometry</i>	FRIDAY BEFORE EASTER RECESS
2/5: Lecture 8, <i>Harmonic Motion & Curve Fitting</i> (§8.8)	4/2: Lecture 20, <i>Area of Triangles</i> (§10.2)
2/7: Lecture 9, <i>Trigonometric Identity Starter</i> (§9.1)	4/4: Lecture 21, <i>Polar Coordinates</i> (§10.6)
2/9: Lab 4: <i>The Gutter Problem</i>	4/6: Lab 9: <i>The Ladder Problem</i>
2/12: Lecture 10, <i>More Trigonometric Identities</i> (§9.1)	4/9: Lecture 22, <i>Polar Coordinates & Equations</i> (§10.6)
2/14: Exam 2 Review	4/11: Exam 4 Review
Evening Review Session	Evening Review Session
2/16: Exam 2 (Lectures 6–10)	4/13: Exam 4 (Lectures 16–22)
2/19: Lecture 11, <i>Sum & Difference Identities</i> (§9.2)	4/16: Lecture 23, <i>Vectors</i> (§10.4)
2/21: Lecture 12, <i>Double-Angle Identities</i> (§9.3)	4/18: Lecture 24, <i>Vectors Revisited</i> (§10.4, §10.5)
2/23: Lab 5: <i>Trigonometric Identities</i>	4/20: Lab 10
2/26: Lecture 13, <i>Half-Angle Identities</i> (§9.3)	4/23: Lecture 25, <i>Vector Applications</i> (§10.5)
Middle Of The Semester	4/25: Final Exam Review
2/28: Lecture 14, <i>Inverse Functions & Inverse Trig Functions</i> (§5.1, §9.4)	4/27: Practice Final Exams
3/2: Lab 6: <i>Inverse Trigonometric Functions</i>	5/2: Final Exam (Comprehensive)