



College of Science and Mathematics  
Department of Mathematics



## MATH 1112: College Trigonometry

Summer Semester 2016

Instructor – Sean F. Ellermeier, Ph.D.

CRN	Days	Time	Course Num/Sec	Location
51331	MW	2:00-4:45 P.M.	MATH 1112/51	D 116

### *A Course in the General Education Program*

**Program Description:** The General Education Program at KSU offers a common academic experience for all its students. In a series of interrelated courses in the liberal arts and sciences, it provides the opportunity for them to acquire the intellectual skills and knowledge characteristic of educated persons in a diverse, global community. Thus, it lays the foundation for success in their academic, professional, and personal arenas. Whereas the major program contributes depth to a college education in a designated specialization, the General Education Program provides breadth of understanding by providing an introduction, connection, and integration to a variety of disciplines needed by educated persons.

**Program Goals:** The General Education Program at KSU has four goals. During the course of the program, students should achieve the following:

- Demonstrate knowledge and understanding of general education disciplines.
- Demonstrate proficiency in communication.
- Demonstrate skills in inquiry, critical thinking, analysis, and problem solving through scholarly and/or creative activity across the general education disciplines.
- Demonstrate an understanding of ethics, diversity, and a global perspective.

MATH 1112 satisfies one of Kennesaw State University's general education program requirements. It addresses the quantitative Math Skills learning outcomes. This learning outcome states:

**Math Skills:** Students will demonstrate the ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables) and/or convert information into mathematical forms at a level appropriate for the complexity of problems in a college-level course.

For more information about KSU's General Education program requirements and associated learning outcomes, please visit the topic "University-Wide Degree Requirements" in the KSU Undergraduate Catalog.

### **General Education Assessment Study:**

Kennesaw State University is currently engaged in a campus-wide assessment of its general education program. The purpose is to measure student achievement with respect to faculty defined student learning outcomes. This course has been selected to participate in the process. No individually-identifiable student information will be collected as part of the assessment. Data will be reported only in aggregated form. Students should know that the data may be used for scholarly work by members of KSU faculty (but only in anonymous and aggregated form). If you are opposed to having your anonymous data used for scholarly work, you can "opt out" of this specific aspect of the process.

For more information on the general education assessment process and for access to an "opt out" form, please click

<http://kennesaw.edu/curriculum/gen-ed-assessment.html>

## Course Description:

### **MATH 1112 – College Trigonometry**

**3 Class Hours 0 Laboratory Hours 3 Credit Hours**

*Prerequisite: MATH 0098 if required.*

This course is a functional approach to trigonometry that incorporates the use of appropriate technology. Emphasis will be placed on the study of trigonometric functions and their graphs incorporating a unit circle approach as well as special triangles and angles. Topics include circular functions, solutions of triangles, trigonometric identities and equations, graphs of trigonometric functions, Law of Sines, Law of Cosines, and vectors. Appropriate applications will be included.

### **Expected Learning Outcomes:**

1. Be able to prove the Pythagorean Theorem.
2. Demonstrate understanding of the six trigonometric ratios of right triangles.
3. Solve problems involving right triangles and trigonometric functions.
4. Solve problems involving arc length of circular arcs and problems involving circular motion.
5. Understand the connection between radian measure and arc length.
6. Derive the 30, 60 and 45 degree trigonometric ratios using basic geometry of triangles.
7. Demonstrate understanding of the unit circle and be able to construct the unit circle.
8. Understand that the sine and cosine functions are parametric equations of the unit circle.
9. Identify the inherent restrictions on the domains of the trigonometric functions and the inverse trigonometric functions. Identify the range of the trigonometric functions and inverse trigonometric functions.
10. Be able to perform basic transformations of the sine and cosine functions (shifts, compression, reflection, etc.).
11. Know and be able to prove the basic trigonometric identities including the Pythagorean identities, sum and difference identities, cofunction identities, reciprocal identities, and double angle identities.
12. Understand odd and even functions and thus the odd and even trigonometric identities.
13. Evaluate and simplify trigonometric expressions using trigonometric identities.
14. Be able to write correct proofs of trigonometric identities and to give counterexamples of non-identities.
15. Be able to prove the Law of Sines and Law of Cosine and be able to solve problems that involve application of these laws.
16. Be able to solve trigonometric equations without a calculator for the angles on the unit circle, and with a calculator for other values.

17. Understand how to apply the principles of trigonometry in solving problems that arise in various elementary applications.

## Instructor Information and Policies for this course

**Instructor Information:** Sean F. Ellermeyer, Office: D 204, Phone: 470-578-6129, e-mail: [sellerme@kennesaw.edu](mailto:sellerme@kennesaw.edu), Course URL: <http://math.kennesaw.edu/~sellerme>

**Office Hours:** By appointment at any mutually convenient time. (Just talk to me after class or call me or e-mail me to arrange a time.)

**Required Textbook:** *Precalculus Graphs & Models, 5th edition*, by Marvin L. Bittinger, Judith A. Beecher, David J. Ellenbogen, and Judith A. Penna.

**Required Calculator:** TI-83, TI-83+, or TI-84 or something similar,

**Other Required Materials:** Graph paper

**Online Resource:** MyMathLab (includes access to the complete eText version of *Precalculus Graphs & Models, 5th edition*) is **not** required for this course. New books purchased at the KSU and General bookstores should come bundled with a subscription to MyMathLab. Anyone just wanting to purchase the subscription to MyMathLab (without purchasing the textbook) can either purchase a MyMathLab registration code at the bookstore, or present their plastic online at the MyMathLab website ([www.mymathlab.com](http://www.mymathlab.com)) to subscribe.

**Instructor's MyMathLab Course ID:** math11592

**Class Participation:** Daily roll will be taken – **twice** per day on most class days. You must be present at the time that roll is taken in order to receive class participation credit. A class participation grade will be assigned at the end of the semester according to the table that appears at the end of this syllabus.

**Grading:** In addition to the class participation grade, there will be three exams of approximately 1 hour to 1 hour and 15 minute duration and a comprehensive two-hour final exam. The exam dates are listed in the course outline. Each exam question will be graded according to the following scheme:

- 20 points -- if your reasoning is correct and well-written. By "well-written", I mean that I am able to easily follow your reasoning, no important details are omitted, correct notation is used, etc. Essentially, you will get 20 points if your reasoning is correct and I am easily able to determine that it is correct because

you have explained yourself clearly with good prose and notation. 20 points is equivalent to a "high A".

- 16 points -- if I can determine that your reasoning is correct but I have to struggle slightly in determining that it is correct due to some unclear writing, incorrect use of notation, or for whatever reason. 16 points is equivalent to a "borderline A--B".

- 10 points -- if your reasoning is "mostly" correct and you have made a strong start at a correct solution to a problem. Essentially, 10 points means high partial credit and is equivalent to a "mid-level C".

- 4 points -- if your reasoning is not "mostly" correct, but at least the beginnings of a correct argument are discernible. Essentially, 4 points means low partial credit and is equivalent to a "borderline D--F".

- 0 points -- if partial credit is not warranted. 0 points is equivalent to a "low F".

Your grade on each exam will be calculated by averaging your individual question scores. Thus a perfect score on any exam is 20. Your final grade at the end of the course will be calculated according to

$$(\text{Class participation grade} + \text{Exam 1 grade} + \text{Exam 2 grade} + \text{Exam 3 grade} + \text{Final Exam grade})/5$$

However, before performing the above calculation, the lowest hour-exam score (or the class participation score) will be dropped and replaced with the final exam score (if the final exam score is higher). Thus, the final exam can be used to take the place of your lowest exam score (or of your class participation score).

The letter grade that you get at the end of the course will be assigned using the result of the above calculation as follows:

- A - for a score between 16 and 20.
- B - for a score between 12 and 15.9.
- C - for a score between 8 and 11.9.
- D - for a score between 4 and 7.9
- F - for a score between 0 and 3.9

This grading scale will be followed exactly with all exam scores and the final score calculation rounded to the nearest tenth. For example, suppose that your scores on Exams 1, 2 and 3 are 9.9, 4.6, and 14.6, your score on the final exam is 11.4 and your class participation score is 16. Since the final exam score is 11.4, which is higher than 4.6, the grade of 4.6 would be disregarded and the grade of 11.4 would be counted in place of it. Thus your grade would be calculated as

$$((9.9+11.4+14.6+11.4+16)/5)=12.7 \text{ (rounded)}$$

In this case your course grade would be a B.

**Important Note:** There will be no make-up exams for any reason (legitimate or not legitimate)! Occasionally, students miss exams for legitimate reasons such as illnesses and automobile mishaps. If you must miss an exam for a legitimate reason, please inform me as soon as possible. If your reason for missing the exam is legitimate, then you will be excused from it and your grade on the portion of the final exam that addresses the material of the missed exam will be used as your grade for the missed exam. In order to be excused from an exam, you must provide written documentation from a doctor (in the case of illness) or from the police (in the case of an auto accident) that states the reason why you were not able to be at KSU on the day of the exam. All such excuses will be verified by me. In some cases in which a student knows ahead of time, and informs me at least one week in advance, that he or she will not be able to be present on an exam day (for a legitimate reason), I allow the student to take the exam early (but not after the official exam day).

**Grades of "Incomplete":** Grades of "Incomplete" (I) are given, at the instructor's discretion, to students who have been doing satisfactory work (at least a C average) up until the last two weeks of the semester but who, for some unavoidable reason, are unable to complete the work of the last two weeks of the semester. No decisions about grades (including grades of Incomplete) will be made until the semester (including the final exam) is finished. Occasionally, students ask me if I will give them a grade of "Incomplete". This request is usually made at some point before the last two weeks of the semester. I can't answer such requests since I do not make any grading decisions until the semester is over. If I see that an "Incomplete" grade is warranted, then I will give that grade (without being asked). I very rarely assign grades of "Incomplete" because I have found that they are usually not warranted. All incomplete work must be made up (and the I grade changed to a regular grade, A, B, C, D, or F) as quickly as possible, typically before the start of the next semester.

## Class Participation Grading Table

<b>Number of Classes Attended (excluding exam days)</b>	<b>Percent (out of 20)</b>	<b>Class Participation Grade</b>
1	5.0	0.3
2	10.0	0.7
3	15.0	1.0
4	20.0	1.3
5	25.0	1.7
6	30.0	2.0
7	35.0	2.3
8	40.0	2.7
9	45.0	3.0
10	50.0	3.3
11	55.0	3.7
12	60.0	4.0
13	65.0	6.0
14	70.0	8.0
15	75.0	10.0
16	80.0	12.0
17	85.0	14.0
18	90.0	16.0
19	95.0	18.0
20	100.0	20.0



# ***WITHDRAWAL FROM THE UNIVERSITY OR FROM INDIVIDUAL COURSES AND ACADEMIC INTEGRITY***

***Summer Term, 2016***

## **Withdrawal**

Students who find that they cannot continue in college for the entire semester after being enrolled, because of illness or any other reason, need to complete an online form. To completely or partially withdraw from classes at KSU, a student must withdraw online at [www.kennesaw.edu](http://www.kennesaw.edu), under Owl Express, Student Services.

The date the withdrawal is submitted online will be considered the official KSU withdrawal date which will be used in the calculation of any tuition refund or refund to Federal student aid and/or HOPE scholarship programs. It is advisable to print the final page of the withdrawal for your records. Withdrawals submitted online prior to midnight on the last day to withdraw without academic penalty will receive a "W" grade. Withdrawals after midnight will receive a "WF". Failure to complete the online withdrawal process will produce no withdrawal from classes. Call the Registrar's Office at 770-423-6200 during business hours if assistance is needed.

Students may, by means of the same online withdrawal and with the approval of the university Dean, withdraw from individual courses while retaining other courses on their schedules. This option may be exercised up until **June 27, 2016**.

This is the date to withdraw without academic penalty for Spring Term, 2016 classes. Failure to withdraw by the date above will mean that the student has elected to receive the final grade(s) earned in the course(s). The only exception to those withdrawal regulations will be for those instances that involve unusual and fully documented circumstances.

## **Academic Integrity**

Every KSU student is responsible for upholding the provisions of the Statement of Student Rights and Responsibilities, as published in the Undergraduate and Graduate Catalogs. Section II of the Statement of Student Rights and Responsibilities addresses the University's policy on academic honesty, including provisions regarding plagiarism and cheating, unauthorized access to University materials, misrepresentation/falsification of University records or academic work, malicious removal, retention, or destruction of library materials, malicious/intentional misuse of computer facilities and/or services, and misuse of student identification cards. Incidents of alleged academic misconduct will be handled through the established procedures of the Department of Student Conduct and Academic Integrity (SCAI), which includes either an "informal" resolution by a faculty member, resulting in a grade adjustment, or a formal hearing procedure, which may subject a student to the Code of Conduct's minimal one semester suspension requirement.