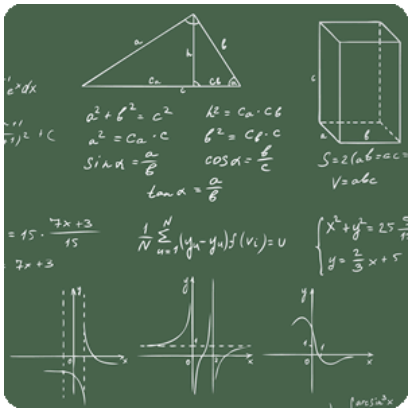
Trigonometry and Analytic Geometry



"Empowering students as architects of their own learning."

Course Code & No. – Section:	MATH 115 – Section 1
Course Title (Credits):	Trigonometry and Analytic Geometry (3)
Term & Year:	Spring 2020
Course Ref. Numbers (CRN):	10444
Instructor:	Dr. Steve Ellsworth
Office Phone:	775-831-1314 x7457
Cell Phone:	775-742-9480
Email:	sellsworth@sierranevada.edu
Office:	TCES 225
Office Hours:	MW 11:00AM-5:00PM T 11:00AM-2:00PM Or by appointment – text to set time.
Class Meeting Times:	5:00PM-6:45PM
Locations:	TCES 206
Prerequisites:	Accuplacer Score, MATH 110, or approval of the instructor
Required Text:	*Trigonometry* by Lial. 11/e. ISBN 9780134217437
Required Computer Programs:	1. Wolfram|Alpha Pro 2. Mathway (free version) 3. Microsoft Office Download (Not Online Version)
Canvas Site:	https://sierranevada.instructure.com/courses/1992

Course Description

A course designed to prepare students for the study of calculus. The topics covered include the following: algebraic skills, measurements of angles, trigonometric functions and inverse trigonometric functions, trigonometric equations and identities, graphing of trigonometric functions, solutions of triangles, applications, polar coordinates, vectors, DeMoivre's theorem, and analytic geometry.

Student Outcomes

At the conclusion of the course, students will be able to:

1. Recognize and use the vocabulary of angles (including standard position, initial and terminal sides, quadrantal angles, coterminal angles, acute, right, and obtuse angles);
2. Use right triangles to evaluate the six trigonometric functions;
3. Compute the six trigonometric functions of any angle and use the unit circle to define the six trigonometric functions for all real numbers;
4. Know and draw the graphs of the six trigonometric functions and their variations;
5. Understand the definitions of the inverse trigonometric functions;
6. Know and apply identities involving the trigonometric functions;
7. Find all solutions of a trigonometric equation;
8. Recognize and use the vocabulary of vectors (vector, scalar, magnitude, direction) to perform arithmetic on vectors and to solve application problems.

Course and SNC Mathematical Goals

- A sense of number and the ability to discern whether a proposed numerical answer to a problem is reasonable – the ability to think correctly about numbers and to use data to make intelligent decisions in life.
- The ability to use mathematical knowledge to confront unfamiliar problems both in concrete and abstract situations – modeling a mathematical problem in several ways to facilitate a solution.
- The ability to discuss the mathematical ideas involved in a problem with other people and to write coherently about mathematical topics and their interrelations.
- General reasoning powers – understanding of mathematical implication and knowledge of why various mathematical statements follow from more basic ideas.
- General algebraic proficiency – the ability to manipulate algebraic expressions -- an understanding of the interrelationships between the symbolic, numeric, and graphic representations of real-world phenomena.
- The ability to visualize, compare, and transform problems geometrically – an understanding of the connections between algebra and geometry.
- An understanding of the uses of mathematics in other disciplines and the use of technology in the solution of mathematical problems.
- The ability to gather, organize, display, and summarize data – the ability to draw conclusions or make predictions from data.

The Mathematical Association of America's (MAA) Committee on the Undergraduate Program in Mathematics (CUPM) in developing future mathematics curriculum has made the following preliminary recommendations:

- Students should achieve mastery of rich and diverse set of mathematical ideas and should experience mathematics as an engaging field with contemporary open questions.
- Students should be able to think analytically and critically, to formulate and solve problems, and to interpret their solutions. They should understand and appreciate the value and validity of careful reasoning, precise definition, and close argument.
- Students should have experience applying knowledge from one branch of mathematics to another and from mathematics to other disciplines.
- Students should be able to use a variety of technology tools.

Tentative Schedule

NOTE – topics, exam date, and any other aspect of the class schedule are subject to change upon notification by instructor. The Course Announcements section of the Canvas course website and in-class announcements will be used to alert students of changes to the syllabus.

Section One – Fundamentals of Statistics

CLASS DATES	CLASS TOPICS	CHAPTERS
W 1/22	Trigonometric Functions	Chapter 1
M 1/27, W 1/29	Trigonometric Functions	Chapter 1
M 2/3, W 2/5	Acute Angles and Right Triangles	Chapter 2
M 2/10, W 2/12	Acute Angles and Right Triangles, Exam One	Chapter 2

Section Two – Probability and Distributions

CLASS DATES	CLASS TOPICS	TRIOLA CHAPTERS
W 2/19	Radian Measure and the Unit Circle	Chapter 3
M 2/24, W 2/26	Radian Measure and the Unit Circle Graphs of the Circular Functions	Chapter 3 Chapter 4
M 3/2, W 3/4	Graphs of the Circular Functions Trigonometric Identities	Chapter 4 Chapter 5
M 3/16, W 3/18	Trigonometric Identities Exam Two	Chapter 5

Section Three – Probability and Distributions, Hypothesis Testing

CLASS DATES	CLASS TOPICS	TRIOLA CHAPTERS
M 3/23, W 3/25	Inverse Circular Functions Trigonometric Equations	Chapter 6
M 3/30, W 4/1	Inverse Circular Functions Trigonometric Equations Applications of Trigonometry	Chapters 6 and 7
M 4/6, W 4/8	Vectors, Conic Sections	Chapter 7
M 4/13, W 4/15	Conic Sections, Exam Three	

Methods of Assessing Student Outcomes

Students will be assessed on the basis of their graded performance on three exams, one final, and a variety of assignments.

Grading Policy

- The course is graded on a straight scale: (A 93-100, A- 90-92, B+ 87-89, B 83-86, B- 80-82, C+ 77-79, C 73-76, C- 70-72, D+ 67-69, D 63-66, D- 60-62, F 0-59) unless a shift downward in the scale is appropriate (based on performance of the entire class).
- Grades on all work will be posted in Canvas. It is your responsibility to check the grades to make sure that there are no errors. Please contact your instructor by e-mail if there is an incorrect or missing grade.

Point summary:

In-class exams (3 @ 250 pts. each)	750 pts.
Assignments - (Rescaled based on % accrued for entire semester)	250 pts.
TOTAL	1000 points

Assignment Grading Rationale

<u>20 point system (Points may be out of 40 or 80 for larger assignments)</u>

20 points

- All portions of the assignment are completed
- It is obvious that a high-quality and in-depth effort was put into the assignment
- If any answers or computations are incorrect they are not major mistakes or do not hinder understanding of the material
- Interpretations are relevant and concise, and yet have enough information to convey an understanding of the material
- It is obvious that no answers were simply copied from another student or group, although answers may be similar from students or groups that work together

15 points

- All portions of the assignment are completed or possibly only a few very minor components are not completed
- A quality effort was put into the assignment but it may lack some depth and understanding
- There are at least one or a few errors that result from a misunderstanding of the material
- Interpretations are mostly relevant but there may be some lack of understanding of the material
- It is obvious that no answers were simply copied from another student or group, although answers may be similar from students or groups that work together

10 points

- The assignment is most likely not completed
- The effort put into the assignment cannot be described as quality work
- There are at least several errors that that result from a misunderstanding of the material
- Interpretations are frequently irrelevant and there is often a misunderstanding of the material
- It is obvious that no answers were simply copied from another student, although answers may be similar from students who work together

5 points

- The assignment is not completed
- The effort can be described as minimal and half-hearted
- There are multiple errors that result in a misunderstanding of the material
- Interpretations are mostly irrelevant and there is a clear misunderstanding of the material
- It is obvious that answers were simply copied from another student or group

0 points

- The assignment was not turned in or basically no real work was put into it.

Important Class Notes

- You must bring a laptop with access to Wolfram|Alpha Pro and Mathway on it in order to take an exam – it is very important that you accept this responsibility. The exams and homework require the use of these programs, so they are integral aspects of the class.
- There are no late exams given, with no exceptions unless approved by the instructor. A make-up exam based directly on the content of the three exams over the semester will be given on Friday, April 17 at 10:00AM. This exam will replace any exam that is missed, or can be taken to replace the lowest score of an exam over the semester.
- If you are unable to take an exam on campus because of a college-related activity (field trip, sporting event, etc.) you must take the exam by midnight on the same day that it is scheduled. The person in charge of the trip (faculty, staff, or coach) must e-mail the instructor to make arrangements for how the exam will be given.
- You may use one 8.5x11 sheet of paper with notes (front and back) during the exams. Note sheets from prior exams in the course may also be used. No photocopies (like from the text) are allowed unless approved by the instructor. During exams no Internet sources other than the course Canvas site may be accessed. Also under no circumstances is it acceptable to share information with other students during exams. Any violation of these rules will result in failing the course.
- It is ***strongly*** recommended that you take very good notes during class sessions and that you study these notes extensively for the exams. If you need tips on how to take good notes ask your instructor or visit the Office of Academic Services and Instructional Support.
- Laptops and cellphones ***absolutely*** may not be used in class for personal use such as observing videos, instant messaging, texting, checking e-mail, doing assignments for other classes or browsing the web. If you bring a laptop to class it must be closed unless approved by the instructor. Cellphones must be turned off and put away, meaning that they are not allowed to be put on the desks during class. Since attendance is not required for the course you have the freedom to laptop work and cellphones outside of the classroom during the class period. If you have to use your cellphone please excuse yourself from the class in a nondisruptive manner. Each violation of this rule may result in the loss of up to 50 points from the overall class score.
- The sharing of any information with others during exams will result in failing the course. Visiting websites other than our Canvas site during exams will also result in failing the course.

ADA Accommodations

In accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973, students with a documented disability are eligible for support services and accommodations. If a student wishes to request an accommodation, please contact the Director of Academic Support Services, Henry Conover, at (775) 831-1314 x7534, hconover@sierranevada.edu or go to the OASIS offices on the third floor of Prim Library within the first week of the semester.

The SNC Email System

The SNC email system is the official communication vehicle among students, faculty members and administrative staff and is designed to protect the confidentiality of student information as required by the Family Educational Rights and Privacy Act of 1974 Act (FERPA). Students should check their college email accounts daily during the school year.

Students have a right to forward their SNC e-mail to another e-mail account (for example, @hotmail or @gmail). However, confidentiality of student information protected by FERPA cannot be guaranteed for SNC e-mail forwarded to an outside vendor. Having email redirected does not absolve a student from the responsibilities associated with official communication sent to his or her SNC email account.

Sanctions for Cheating and/or Plagiarism

The Honor Code

The faculty of SNC believes students must be held to high standards of integrity in all aspects of college life in order to promote the educational mission of the College and to encourage respect for the rights of others. Each student brings to the SNC community unique skills, talents, values and experiences which, when expressed within the community, contribute to the quality of the educational environment and the growth and development of the individual. Students share with members of the faculty, administration and staff the responsibility for creating and maintaining an environment conducive to learning and personal development, where actions are guided by mutual respect, integrity, responsibility and trust. The faculty and students alike must make diligent efforts to ensure high standards are upheld by their colleagues and peers as well as themselves. Therefore, faculty and students accept responsibility for maintaining these standards at Sierra Nevada College and are obligated to comply with its regulations and procedures, which they are expected to read and understand.

Consequences of Violating the Student Honor Code

SNC students and faculty share the responsibility for maintaining an environment of academic honesty. Thus, all are responsible for knowing and abiding by the SNC Faculty/Student Honor Code published in the current SNC Catalog. Faculty are responsible for presenting the Honor Code and the consequences of violating it to students at the start of their classes AND for reporting all incidences of academic dishonesty to the Provost. Students are responsible for knowing what constitutes CHEATING, PLAGIARISM and FABRICATION and for refraining from these and other forms of academic dishonesty. Violations of the Honor Code become part of a student's academic record.

1st Offense: Student receives a zero for assignment/exam and counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

2nd Offense: Student fails course and receives counseling with faculty on the honor code, consequences for violating the honor code, and the value of academic honesty in learning.

3rd Offense: Student is expelled.

The Sierra Nevada College Mission Statement:

Sierra Nevada College graduates will be educated to be scholars of and contributors to a sustainable world. Sierra Nevada College combines the liberal arts and professional preparedness through an interdisciplinary curriculum that emphasizes entrepreneurial thinking and environmental, social, economic and educational sustainability.

The Core Themes:

Liberal Arts	Professional Preparedness
Entrepreneurial	Thinking Sustainability