MATH136 Technical Trigonometry
2 Credits

Course Description

A study of the fundamentals of trigonometry: right triangle trigonometry, the law of sines, the law of cosines, vectors and graphing. Emphasis is places on problem solving for the technology fields.

Prerequisite

MATH 132

Required Text and Materials

- ***College Mathematics*** – 9 th Edition Access Code. Boston: Pearson.
*Note: The Book is NOT required, MyMathLab Code is Required. You must purchase it at our bookstore or through our class website. * (if you have already taken MATH 130 or MATH 132 your access code will still be active for this course)
- Scientific Calculator
- Access to a computer/tablet with internet connection and flash player

Contact Coleen at the NDSCS Bookstore for the most current textbook information (1-800-342-4325, ext. 2239 or coleen.thoe@ndscs.edu). You may also visit the NDSCS Bookstore web site at www.ndscsbookstore.com and search for book information by class by clicking the "Textbook" tab.

Learning Outcomes

Upon completion of this course, the student will be able to:

1. Use various notations to represent points, lines, line segments, rays, planes and angles.
2. Classify angles according to size.
3. Determine the measure of an angle by using relationships among intersecting lines.
4. Convert angle measures between decimal degrees and degrees, minutes and seconds.
5. Calculate the perimeter of triangles.
6. Calculate the area of triangles.
7. Find the circumference or area of a circle using the appropriate formula.
8. Find the arc length of a sector.
9. Classify triangles by the relationship of the sides or angles.
10. Determine if two triangles are congruent using inductive and deductive reasoning.
11. Solve problems that involve similar triangles.
12. Use the Pythagorean theorem to find the unknown side of a right triangle.
13. Use the properties of 45-45-90 triangles to find unknown parts.
14. Use the properties of 30-60-90 triangles to find unknown parts.
15. Find the sine, cosine, and tangent of right triangles given at least two sides.
16. Find trigonometric value for sine, cosine, and tangent using a calculator.
17. Find and angle measure given trigonometric value.
18. Find the unknown parts of a right triangle using the sine function.
19. Find the unknown parts of a right triangle using the cosine function.
20. Find the unknown parts of a right triangle using the tangent function.
21. Select the most direct method for solving right triangles.

22. Solve applied problems using right triangle trigonometry.
23. Find the magnitude of a vector in standard position, given the coordinates of the endpoint.
24. Find the direction of a vector in standard position, given the coordinates of the endpoint.
25. Graph rectangular and polar coordinates.
26. Convert vectors in standard position between rectangular and polar coordinate notation.
27. Find the resultant of two or more vectors.
28. Add, subtract, multiply and divide vectors.
29. Find related acute angles for angles or vectors in quadrants II, III, IV.
30. Determine the signs of trigonometric values of angles of more than 90 degrees.
31. Find trigonometric values of angles of more than 90 degrees using a calculator.
32. Graph a sine or cosine function by hand and using the calculator.
33. Find the amplitude of a sine or cosine function.
34. Find the period of a sine or cosine function.
35. Find the phase shift of a sine or cosine function.
36. Find the unknown parts of an oblique triangle, given two angles and a side using the law of sines.
37. Find the unknown parts of an oblique triangle, given two sides and an angle opposite one of them using the law of sines.
38. Find the unknown parts of an oblique triangle, given three sides of the triangle using the law of cosines.
39. Find the unknown parts of unknown parts of an oblique triangle, given two sides and the included angle using the law of cosines.

Course Policies and Procedures

Access Policy: Computer Failures and Viruses

Online students must maintain computer access at all times to the online course. Lack of computer access as an excuse for late work or missed exam/quiz will NOT be accepted. Review the Computer Access Policy to learn how you can take a proactive approach to your online success.

Student Attendance

Regular attendance and completion of all assignments, on time and as scheduled, is important to your success in this course. An online student who does not regularly attend their online class for a period of seven consecutive days may be dropped from the course. Attendance is evidenced by weekly completion of assignments and/or participation in online discussions. Efforts to contact inactive students are attempted as soon as each semester begins; however, if there is no response from the student and inactivity continues, a drop will be enacted. See the entire NDSCS Attendance Policy at www.ndscs.edu/online-attendance.

If your instructor is unexpectedly unavailable and may be delayed in reviewing or correcting assignments, you will be notified of this as a sign of courtesy and respect.

Online Student Participation and Conduct Guidelines

The practices of courtesy and respect that apply in the traditional classroom also apply online. However, the expectations and practice differ in the online classroom to greater extent. Review the Online Student Participation and Conduct Guidelines (**Appendix A**) to learn of these expectations.

Assignments

Please follow the order of units as each unit will build onto the next one and will be accessible according to the schedule posted within the online course.

Assignments and quizzes within each chapter are **due within specified time frames**. Refer to the Schedule for specific due dates.

Assignments not completed by the specified deadline but submitted late will have **10% of grade points deducted** at instructor's discretion.

No points will be assigned for incomplete assignments. Be prepared to spend **at least four (4) hours per week** in the online class, studying, and completing assignments.

Submitting Assignments

Most homework assignments will be done online using MyMathLab (MML). All worksheets should be turned in via **Dropbox** unless otherwise specified. You are **strongly encouraged** to make hard copies of your assignments and communications with the instructor to avoid losing data in the case of technical issues. *At the first sign* of problems, contact your Internet Service Provider (ISP) immediately.

It is your responsibility to access the class on another computer in the event of hardware or software problems. If your problems are not cleared up within 12 hours, contact the instructor to make other arrangements.

Proctored Exams

Exams in this class will be proctored. You will need to have the Proctor Form completed and returned within the first 7 days of the course. You can download the Proctor Form from the Getting Started or Proctor Form content item within the online course.

Grading and Evaluation

Total points from test, quizzes, and assignments will be accumulated throughout the 8 weeks and letter grades will be assigned to the following distribution:

LETTER GRADE	PERCENT
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	Below 60%

Your final grade will be weighted as follows:

Homework = 30% Quizzes = 20% Tests = 50%

Student-Instructor Communications

While an online class is available 24 hours a day and offers greater flexibility for the student and instructor, keep in mind that your instructor will not be available 24 hours a day. Instructors will check

email, voicemail, and Cyber Office messages on a regular basis, but there may be times when they are unavailable due to other commitments and job responsibilities. Email, voicemail, or Cyber Office Messages will be responded to as time allows. As a general rule, you can expect your direct questions to be answered within 24 hours during week days.

When sending an email, please include your full name so your instructor knows who they are responding to. Often, the email address does not indicate who is sending the message.

Student E-Mail Accounts

NDSCS students are to use an NDSCS email account exclusively to ensure the lines of communication with your instructor and NDSCS are not broken, which often happens with other email providers. You can access your email account by following instructions at www.ndscs.edu/It-Setup. If you need help accessing your NDSCS email, contact the NDSCS IT Service Desk at 800-342-4325 ext 3333 or ndscs.servicedesk@ndscs.edu.

To make your NDSCS email account your preferred email address, log into your CampusConnection account and check the "preferred" box by campus email.

The NDSCS e-mail system provides students with an entire suite of services such as:

- 10 GB storage for email
- Instant messaging through Skype for Business
- Rich calendaring
- Photo sharing
- Multi-browser support
- SMS alerts to mobile phones

Academic Integrity

Integrity is an NDSCS core value and there is an expectation that all students, as members of the college community, adhere to the highest levels of academic integrity.

Dishonesty in class, laboratory, shop work or tests is regarded as a serious offense and is subject to disciplinary action by the instructor and dean of the respective division. For more information, refer to the NDSCS Student Planner or College Catalog under College Policies and Basic Regulations of Conduct (page 32).

Types of Misconduct

Cheating: Intentionally using or attempting to use unauthorized materials, information, or study aids n any academic exercise.

Fabrication: Intentionally and unauthorized falsification or invention of any information or citation in an academic exercise.

Facilitating academic dishonesty: Intentionally or knowingly helping or attempting to help another to commit an act of academic dishonesty.

Plagiarism: Intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

Disabilities and Special Needs

If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both your instructor and the **Student Accessibility Coordinator** (phone 671-2623, or toll-free 1-800-342-4325 ext. 3-2623) as early as possible in the term.

APPENDIX A
ONLINE STUDENT PARTICIPATION AND CONDUCT GUIDELINES

Online courses are based on the premise that students learn best in a community. The instructor plays an important role, but this is a different role than most instructors play in the traditional, face-to-face classroom. While you may see a shift in the way classes work, you'll also notice that some things don't change: the practices of courtesy and respect that apply in the ordinary classroom also apply online, and may actually require more attention in this venue. Here are some guidelines:

1.   **Get involved**. In the online environment, it's not enough to show up! Your voice must be heard in order to show your presence. Your comments are needed to add to the information, the shared learning, and the sense of community in each class.

2.   **Be persistent**. Remember that for many this is a fairly new environment. Each instructor still sets the rules, and you need to abide by them; however, if you run into any difficulties, don't wait! Send your instructor an email immediately or post in the Discussion Area. Most problems are easily solved, but your instructor and your fellow students need to hear from you before they can help.

3.   **Share tips, helps, and questions**. For many, taking online courses is a new experience. There are no dumb questions, and even if you think your solution is obvious, please share it by posting it in the Discussion Area. For every student who asks a question, there are 10 others wanting to know the same thing.

4.   **Think before you push the Send button**. Did you say just what you meant? How will the person on the other end read the words? While you can't anticipate all reactions, do read over what you've written before you send it.

5.   **Consider the context**. Remember that we can't see the grin on your face when you make a sarcastic comment, we can't see the concern on your face if you only say a couple of words, and we can't read your mind and fill in the gaps if you abbreviate your comments. So: help us "see" you by explaining your ideas fully.

6.   **Ask for feedback**. Not sure how your ideas and comments will be taken? Remember there's a person on the other side. If you disagree with what someone has said, practice all your communication skills as you express that disagreement. "Flaming," or flying off the handle and ranting at someone is unacceptable; it is the equivalent of having a tantrum, something most of us wouldn't do in an onsite, face to face classroom.

7.   **Act with respect**. Any discriminatory, derogatory or inappropriate comments are unacceptable and subject to the same disciplinary action that they would receive if they occurred in the face to face classroom. If you have concerns about something that has been said, please contact your instructor.

8.   **Exercise integrity**. Plagiarism, cheating, and other violations of ethical student behavior are serious actions in a learning community. See Academic Integrity Policy in the course syllabus.

9.   **Recognize the consequences**. Consequences of online student behavior that contradicts the NDSCS Academic Integrity policy will be addressed on an individual basis and in accordance with NDSCS Academic Integrity policy. Refer to the NDSCS Student Planner or College Catalog for more information.

*Adapted with permission from Dr. C. A. Keller, San Antonio College