

Department:

Mathematics

Course Description:

This course includes the study of circular functions and their graphs, working with the right triangle, unit circle, inverse circular functions, identities, conditional equations, the Law of Sines, the Law of Cosines, and other topics as time permits.

Course Competencies:

The learning outcomes and competencies detailed in this syllabus meet or exceed the learning outcomes and competencies specified by the Kansas Core Outcomes Groups for this course as approved by the Kansas Board of Regents. (Kansas Regents Shared Number Course and Title: **KRSN Course MAT1030 Trigonometry.**)

Upon completion of the course, the student should be able to:

1. Define and interpret radian measurement.
2. Recognize and apply circular functions as real-valued functions.
3. Solve for unknown sides/angles within right triangles and know trigonometric function values for special angles (multiples of $\frac{\pi}{6}$ and $\frac{\pi}{4}$).
4. Define the trigonometric functions using both the right triangle and the unit circle.
5. Analyze the graphs of the six basic trigonometric functions and their arithmetic combinations using the concepts of period, phase shift, amplitude, and displacement.
6. Derive and verify the trigonometric identities, including but not limited to double angle, half angle, angle sum, and angle difference.
7. Define, graph, and apply inverse trigonometric functions.
8. Find solutions of oblique triangles using the Law of Sines or Law of Cosines.
9. Solve equations involving trigonometric functions.
10. Solve applied problems, including but not limited to vectors.
11. Derive the trigonometric form of complex numbers and perform calculations with them, including products and quotients.
12. Translate between rectangular and polar coordinates and graph within the polar coordinate system.

Course Content:

- A. Circular Functions
- B. Graphs and Inverse Circular Functions
- C. Trigonometric Functions and Solutions of Triangles
- D. Identities
- E. Conditional Equations
- F. Polar Coordinates and Complex Numbers
- G. Additional Topics

Learning Assessments:

Course competencies will be assessed by written examinations covering all course materials, including quizzes and regular hour-long exams and a comprehensive final exam. Some assessment may also occur through a written report on the results of the Internet project chosen by the instructor, as well as through regular collection of homework and in-class work.

Instructional Materials:

Textbook: Barnett, R. A., Ziegler, M. R., Byleen, K. E. (2012). *Analytic Trigonometry with Applications* (11th ed.). Hoboken, NJ: John Wiley & Sons, Inc. ISBN-13: 978-0470648056

A graphing calculator is also required. The TI-83 plus model is recommended. Students should use the instructional book that accompanies the graphing calculator of their choice, as the instructor will not have time to teach students how to use the various graphing calculators.

Guidelines for Requesting Accommodations Based on Documented Disability or Medical Condition

It is the intention of Highland Community College to work toward full compliance with the Americans with Disabilities Act, to make instructional programs accessible to all people, and to provide reasonable accommodations according to the law.

Students should understand that it is their responsibility to self-identify their need(s) for accommodation and that they must provide current, comprehensive diagnosis of a specific disability or medical condition from a qualified professional in order to receive services. Documentation must include specific recommendations for accommodation(s). Documentation should be provided in a timely manner prior to or early in the semester so that the requested accommodation can be considered and, if warranted, arranged.

In order to begin the process all students **must** complete the “Disabilities Self-Identification Form” on our [Disability Services website](#).

This form can also be accessed at the Highland Community College homepage under Students Services/Student Resources/Disability Service or by contacting the Disabilities Coordinator.

A Note on Harassment, Discrimination and Sexual Misconduct

Highland Community College seeks to assure all community members learn and work in a welcoming and inclusive environment. Title VII, Title IX, and College policy prohibit harassment, discrimination and sexual misconduct. Highland Community College encourages anyone experiencing harassment, discrimination or sexual misconduct to talk to report to the Vice President for Student Services, the Human Resources Director or complete an [online report](#) about what happened so that they can get the support they need and Highland Community College can respond appropriately.

There are both confidential and non-confidential resources and reporting options available to you. Highland Community College is legally obligated to respond to reports of sexual misconduct, and therefore we cannot guarantee the confidentiality of a report, unless made to a confidential resource. Responses may vary from support services to formal investigations. As a faculty member, I am required to report incidents of sexual misconduct and thus cannot guarantee confidentiality. I must provide our Title IX coordinator with relevant details such as the names of those involved in the incident. For more information about policies and resources or reporting options, please review our [Equity Grievance Policy](#).