**1. COURSE TITLE\*:** College Trigonometry

**2. CATALOG – PREFIX/COURSE NUMBER/COURSE SECTION\*: MATH 1142**

**3. PREREQUISITES\*:**

 **:** One of the following:

- Four High school STEM or Core Math courses with grades A, A, B, B or higher.

 - MATH 1141

 - ACT Math Score of 26 or higher

**COREQUISITE(S)\*: None**

**4. COURSE TIME/LOCATION/MODALITY: (*Course Syllabus – Individual Instructor Specific*)**

**5. CREDIT HOURS\*:** 4 **LECTURE HOURS\*:** 4

 **LABORATORY HOURS\*:** 0 **OBSERVATION HOURS\*: 0**

**6. FACULTY CONTACT INFORMATION: *(Course Syllabus – Individual Instructor Specific)***

**7. COURSE DESCRIPTION\*:**

This course includes a study of trigonometric functions and their applications. Topics include circular functions, trigonometric functions, trigonometric identities, Trigonometric equations, vectors, the complex plane, polar coordinates, conic sections, and applications of these concepts.

**8. LEARNING OUTCOMES\*:**

At the completion of this course the student will:

1. [TMM 003 obj. 1a] Analyze functions.
2. [TMM003 obj. 1b] Convert between different representations of a function.
3. [TMM003 obj. 1c] Perform operations with functions including addition, subtraction, multiplication, division, composition, and inversion; connect properties of constituent functions to properties of the resultant function; and resolve a function into a sum, difference, product, quotient, and/or composite of functions.
4. [TMM003 obj. 2a] Analyze angles. Routine analysis of angle measurements, units, and arithmetic.
5. [TMM003 obj. 2b] Analyze right triangles. Routine analysis of side lengths and angle measurements using trigonometric ratios/functions, as well as the Pythagorean Theorem.
6. [TMM003 obj. 2c] Analyze general triangles. Routine analysis of side lengths and angle measurements using trigonometric ratios/functions, as well as other relationships.
7. [TMM003 obj. 3a] Recognize function construction/algebra as it appears in equations and inequalities and choose an appropriate solution methodology for a particular equation or inequality, as well as communicate reasons for that choice.
8. [TMM003 obj. 3b] Use correct, consistent, and coherent notation throughout the solution process to a given equation or inequality.
9. [TMM003 obj. 3c] Distinguish between exact and approximate solutions and which solution methodologies result in which kind of solutions.
10. [TMM003 obj. 3d] Demonstrate an understanding of the algebraic, functional, and geometric views of equation solutions. Solutions to equations can simultaneously serve multiple purposes by representing numbers satisfying an equation, zeros of a function, and intersection points of two curves.
11. [TMM003 obj 3e] Cite domain restrictions resulting from solution decisions and situation restrictions and reflect these in solution set descriptions.
12. [TMM obj. 4a] Purposefully create equivalences and indicate where they are valid.
13. [TMM003 obj. 4b] Recognize opportunities to create equivalencies in order to simplify workflow.
14. [TMM001 obj. 4c] Become Fluent with conversions using traditional equivalency families.
15. [TMM 003 obj. 5a] Interpret the function correspondence and behavior of a given model in terms of the context of the model.
16. [TMM003 obj. 5b] Create periodic models from data.
17. [TMM003 obj. 5c] Determine parameters of a model given the form of the model and data
18. [TMM003 obj. 5d] Determine a reasonable applied domain for the model, as well as articulate the limitations of the model.
19. [TMM003 obj. 6a] Anticipate the output from a graphing utility and make adjustments, as needed, in order to efficiently use the technology to solve a problem.
20. [TMM003 obj. 6b] Use technology to verify solutions to equations and inequalities obtained algebraically.
21. [TMM003 obj. 6c] Use technology to obtain solutions to equations and inequalities which are difficult to obtain algebraically and know the difference between approximate and exact solutions
22. [TMM003 obj. 7a] Recognize when a result (theorem) is applicable and use the result to make sound logical conclusions and to provide counter-examples to conjectures.

**9. ADOPTED TEXT\*:**

**(Instructor choice)**

# Algebra & Trigonometry

# 2nd Edition,

# Abramson.

Open Stax, 2024

ISBN: 978-1-951693-40-4

# **OR**

# Algebra & Trigonometry

# 11th Edition,

# Sullivan.

Pearson, 2020

ISBN: 13-978-0-13-516307-8

**9a: SUPPLEMENTAL TEXTS APPROVED BY FULL TIME DEPARTMENTAL FACULTY (INSTRUCTOR MUST NOTIFY THE BOOKSTORE BEFORE THE TEXTBOOK ORDERING DEADLINE DATE PRIOR TO ADOPTION) \*\*\*.**

**10. OTHER REQUIRED MATERIALS: (SEE APPENDIX C FOR TECHNOLOGY REQUEST FORM.)\*\***

Students must have a scientific calculator, but they may not use any calculator that is classified as a symbolic manipulator.

**11. GRADING SCALE\*\*\*:**

Grading will follow the policy in the catalog. The scale is as follows:

A: 90 – 100

 B: 80 – 89

 C: 70 – 79

 D: 60 – 69

 F: 0 – 59

**12. GRADING PROCEDURES OR ASSESSMENTS: (*Course Syllabus – Individual Instructor Specific)***

|  |
| --- |
| *Example 1 - By Percent* |
|  Homework 10% Quizzes/Tests 90% Total 100% |

|  |
| --- |
| *Example 2*  |
| *Category* | *By Total Points* | *% of Grade* |
| Homework (20x10) | 200 | 10% |
| Quizzes/Tests(5x360) | 1800 | 90% |
| Total | 2000 | 100% |

|  |
| --- |
| *Example 3* |
| *Category* | *By Total Points* | *% of Grade* |
| Online Quizzes | 400 | 100% |
| Online Tests(6x100) | 600 | 15% |
| Notebook(2x500) | 1000 | 25% |
| Midterm | 1000 | 25% |
| Final | 1000 | 25% |
| Total | 4000 | 100% |

**13. COURSE METHODOLOGY: *(Course Syllabus – Individual Instructor Specific)***

The course design provides instruction and materials to support the course objectives. Classes may consist of a variety of means to accomplish this including but not limiting to: lectures, class discussions, small group projects, supplemental materials, and outside assignments. Practice is an important part of the learning process. For every one hour of class time, two to three additional hours of study time should be expected.

**14. COURSE OUTLINE: *(Course Syllabus – Individual Instructor Specific)***

 Chapter 7 The Unit Circle: Sine and Cosine Functions

 7.1 Angles (obj. 1a, 2a, 7a)

 7.2 Right Triangle Trigonometry (obj. 2b, 6b, 7a)

 7.3 Unit Circle (obj. 2a, 6b)

 7.4 The Other Trigonometric Functions (obj. 1a, 1b, 6b)

Chapter 8 Periodic Functions

8.1 Graphs of the Sine and Cosine Functions (obj. 1b, 1c, 3d, 3e, 5a, 5b, 5c, 5d, 6a, 7a)

8.2 Graphs of the Other Trigonometric Functions (obj. 1b, 1c, 3d, 3e, 5a, 5b, 5c, 5d, 6a, 7a)

 8.3 Inverse Trigonometric Functions (obj. 1b, 1c, 5c, 6b, 7a)

Chapter 9 Trigonometric Identities and Equations

9.1 Verifying Trigonometric Identities and Using Trigonometric Identities to Simplify Trigonometric Expressions (obj. 1c, 3b, 3e, 4a, 4b, 4c, 7a)

 9.2 Sum and Difference Identities (obj. 3a, 3b, 4a, 4b, 4c, 7a)

9.3 Double-Angle, Half-Angle, and Reduction Formulas (obj. 3a, 3b, 4a, 4b, 4c, 7a)

 9.4 Sum-to-Product and Product-to-Sum Formulas (obj. 3a, 3b, 4a, 4b, 4c, 7a)

 9.5 Solving Trigonometric Equations (obj. 3a, 3b, 4a, 4b, 4c, 7a)

Chapter 10 Further Applications of Trigonometry

 10.1 Non-right Triangles: Law of Sines (obj. 2c, 3b, 3c, 6c, 7a)

 10.2 Non-right Triangles: Law of Cosines (obj. 2c, 3b, 3c, 6c, 7a)

 10.3 Polar Coordinates (obj. 4b, 6c, 7a)

 10.4 Polar Coordinates: Graphs (obj. 1b, 3d, 6a)

 10.5 Polar Form of Complex Numbers (obj. 1b, 7a) 10.6 Parametric Equations (optional) (obj. 1b, 5a, 5c, 5d, 6c, 7a) 10.7 Parametric Equations: Graphs (optional) (obj. 1b, 3d, 5a, 5c, 5d, 6a,7a) 10.8 Vectors (obj. 1b, 3b, 6c, 7a)

Chapter 12 Analytic Geometry

 12.1 The Ellipse (obj. 1b, 1c, 6a)

 12.2 The Hyperbola (obj. 1b, 1c, 6a)

 12.3 The Parabola (obj. 1b, 1c, 6a)

 12.4 Rotation of Axes (optional) (obj. 6a, 7a) 12.5 Conic Sections in Polar Coord. (optional) (obj. 1b, 1c, 7a)

Assignments will be evaluated according to instructor directives.

Suggested pace for the course:

Week 1: Chapter 7

Week 2: Chapter 7

Week 3: Chapter 7

Week 4: Chapter 8

Week 5: Chapter 8

Week 6: Chapter 8

Week 7: Chapter 9

Week 8: Chapter 9

Week 9: Chapter 9

Week 10: Chapter 9

Week 11: Chapter 10

Week 12: Chapter 10

Week 13: Chapter 10

Week 14: Chapter 12

Week 15: Chapter 12

Week 16: **Finals**

**15. SPECIFIC MANAGEMENT REQUIREMENTS\*\*\*:**

**16. FERPA: \***

Students need to understand that their work may be seen by others. Others may see your work when being distributed, during group project work, or if it is chosen for demonstration purposes. Students also need to know that there is a strong possibility that your work may be submitted to other entities for the purpose of plagiarism checks.

**17. ACCOMMODATIONS: \***

Students requesting accommodations may contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431, X 2604.

Students seeking a religious accommodation for absences permitted under Ohio’s Testing Your Faith Act must provide the instructor and the Academic Affairs office with written notice of the specific dates for which the student requires an accommodation and must do so no later than fourteen (14) days after the first day of instruction or fourteen (14) days before the dates of absence, whichever comes first. For more information about Religious Accommodations, contact Ryan Hall, Accessibility Coordinator at rhall21@sscc.edu or 937-393-3431 X 2604.

**18. OTHER INFORMATION\*\*\*:**

Technical Assistance: Canvas provides a Help Center, complete with information and tutorials to help students use this course management system. To access the learning tools, logon to Canvas and access the Help link at the far left, the last icon.

If you experience problems accessing your MySSCC account, email, or if you have other general technical problems related to your SSCC or Canvas access, contact the SSCC Tech Support at 800-628-7722, ext. 2800, or email Tech Support at techsupport@sscc.edu.

Learning Services: SSCC offers free learning services to students. For more information on these services, visit the Learning Services webpage at https://www.sscc.edu/services/learning-services.shtml

**SYLLABUS TEMPLATE KEY**

**\*** Item cannot be altered from that which is included in the master syllabus approved by the Curriculum Committee.

**\*\*** Any alteration or addition must be approved by the Curriculum Committee

\*\*\*Item should begin with language as approved in the master syllabus but may be added to at the discretion of the faculty member.