**1. COURSE TITLE\*:** Technical Mathematics

**2.** **CATALOG – Prefix/Course Number/Course Section\*:** MATH 1120

**3. PREREQUISITES\*:**

A student must meet one of the following criteria to register for this course:

- Math 1118

- Three High school STEM or Core Math courses with grades of C or higher

- Accuplacer QAS with a score of 253 or higher

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

**5. CREDIT HOURS\*:** 3 **LECTURE HOURS\*:** 3

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

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

**7. COURSE DESCRIPTION:**

 This course contains skills and applications related to the engineering technologies. Emphasis is on formulas, graphing, trigonometry, vectors, exponential, and logarithmic functions.

**8. LEARNING OUTCOMES:**

 At the completion of this course the student will be able to:

 1. Make observations and perform computations involving ratio, proportion, and variation.

 2. Solve literal equations and evaluate formulas.

 3. Use the Pythagorean Theorem and basic trigonometry functions to solve triangles.

 4. Use vectors and component vectors to solve problems.

 5. Interpret and use angle and radian measure.

 6. Graph trigonometric functions.

 7. Graph exponential and logarithmic functions.

 8. Solve exponential equations.

 9. Use trigonometry to solve applied problems.

**9. ADOPTED TEXT(S):**

 *Basic Technical Mathematics with Calculus*

12th edition

Allyn J. Washington and Richard S. Evans.

 Pearson 2023,

ISBN: 9780137582600

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

 Scientific calculator required.

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

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: Below 60

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

|  |
| --- |
| *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% |
|  |  |  |

**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 additional hours of study time should be expected.

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

 Chapter 18 Variation

 18.1 Ratio and Proportion Review as needed

 18.2 Variation Review as needed

 Chapter 13 Exponential and Logarithmic Functions

 13.1 Exponential Functions

 13.2 Logarithmic Functions

 13.3 Properties of Logarithms

 13.4 Logarithms to the Base 10

 13.5 Natural Logarithms

 13.6 Exponential and Logarithmic Equations

 Chapter 4 The Trigonometric Functions

 4.1 Angles

 4.2 Defining the Trigonometric Functions

 4.3 Values of the Trigonometric Functions

 4.4 The Right Triangle

 4.5 Applications of Right Triangles

 Chapter 8 Trigonometric Functions of Any Angle

 8.1 Signs of the Trigonometric Functions

 8.2 Trigonometric Functions of Any Angle

 8.3 Radians

 8.4 Applications of Radian Measure

 Chapter 9 Vectors and Oblique Triangles

 9.1 Introduction to Vectors

 9.2 Components of Vectors

 9.3 Vector Addition by Components

 9.4 Applications of Vectors

 9.5 Oblique Triangles, the Law of Sines

 9.6 The Law of Cosines

 Chapter 10 Graphing the Trigonometric Functions

 10.1 Graphs of $y=a\sin(\left(x\right))$ and $y=a cos⁡(x)$

 10.2 Graphs of $y=a sin⁡(bx)$ and $y=a cos⁡(bx)$

 10.3 Graphs of $y=a sin⁡(bx+c)$ and $y=a cos⁡(bx+c)$

10.4 Graphs of $y=a\tan(\left(x\right))$, $y=a cot⁡(x)$, $y=a\sec(\left(x\right))$ and $y=a csc⁡(x)$ (Optional)

 10.5 Applications of the Trigonometric Graphs

 10.6 Composite Trigonometric Curves

 Chapter 13 Trigonometric Formulas and Identities

 20.1 Fundamental Trigonometric Identities

 20.2 The Sum and the Difference Formulas Optional

 20.3 Double-Angle Formulas Optional

 20.4 Half-Angle Formulas Optional

20.5 Solving Trigonometric Equations Optional

 20.6 The Inverse Trigonometric Functions Optional

 Chapter 12 Complex Numbers (Exponential form optional)

 12.1 Basic Definitions

 12.2 Basic Operations with Complex Numbers

 12.3 Graphical Representation of Complex Numbers

 12.4 Polar Form of a Complex Number

 12.5 Exponential Form of a Complex Number Optional

 12.6 Powers and Roots (Powers and Roots Optional)

 12.7 An Application to Alternating-current (ac) Circuits Optional

Week 1: Chapters 18

Week 2: Chapter 13

Week 3: Chapter 13

Week 4: Chapter 4

Week 5: Chapter 4

Week 6: Chapter 8

Week 7: Chapter 8

Week 8: Chapter 9

Week 9: Chapter 9

Week 10: Chapter 9

Week 11: Chapter 9, 10

Week 12: Chapter 10

Week 13: Chapter 10, 20

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 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\*\*\*:**

**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.