



# North Central Michigan College Master Course Syllabus

## PART 1:

Course Name: Trigonometry

Course Number: MATH 140

Credit Hrs. 4

Lecture Hrs. 4

Lab Hrs. 0

Clinical Hrs. 0

Variable Hrs. 0

Total Hours of Instruction: 4

Total Contact Hours: 70.4

*(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs.) x 17.6)*

### Course Description:

A review of geometry and algebra concepts necessary for trigonometry and preparation for further study in calculus. Trigonometric functions will be examined using the right triangle and unit circle concept. Graphs of trigonometric functions and their inverses; trigonometric identities and equations; and applications of trigonometry will be studied. Additional topics include the study of vectors and their applications; polar coordinates and graphs of polar equations with applications; and parametric equations and their applications. Use of graphing calculators and current technology will be emphasized.

Prerequisite (s): MATH 130 with a grade of "C" or higher or higher or placement determined by ACT, SAT and/or North Central Assessment/Placement scores.

Co-requisite (s): None

### Course Objectives:

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

- Solve trigonometric applications using a unit circle approach or a right triangle approach.
- Demonstrate ability to graph trigonometric functions and their inverses.
- Demonstrate the validity of trigonometric identities algebraically or geometrically and utilize them in solving application problems.
- Graph polar and parametric curves.

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services to arrange for these (231)348-6687 or (231)348-6817, Room 533 SCRC.



# North Central Michigan College Master Course Syllabus

## PART 2:

### Course Objectives and Linked Lumina DQP Outcomes

See **PART 3** of this syllabus for the complete language of each Lumina DQP outcome.

*Please identify the Lumina DQP outcome(s) supported by the course objectives. List each course objectives (from **PART 1**), followed by the corresponding Lumina DQP Outcome number(s) in parentheses.*

- Solve trigonometric applications using a unit circle approach or a right triangle approach. (DQP 2, 10, 13)
- Demonstrate ability to graph trigonometric functions and their inverses. (DQP 2, 10, 13)
- Demonstrate the validity of trigonometric identities algebraically or geometrically and utilize them in solving application problems. (DQP 2, 10, 11, 13)
- Graph polar and parametric curves (DQP 2, 10, 11, 13)



# North Central Michigan College Master Course Syllabus

**Suggested Methods of Instruction:**

Lecture, discussion, collaborative group work, and assignments.

**Suggested Methods of Assessment and Evaluation:**

Tests and final examination; homework and participation; and projects

**Adopted Text at Time of Course Adoption/Revision:**

Trigonometry 7e, Charles McKeague and Mark Turner, Brooks/Cole Cengage Learning, 2013

**Topics Covered During the Semester:**

*Sequence of topics and time allowance are at the discretion of the instructor*

- Week 1: Problem Solving Strategies, Geometry & Algebra Review
- Week 2: Intro to Right Triangle Trigonometry Functions & Identities
- Week 3: Trig Functions & Applications
- Week 4: Trig Functions & Applications
- Week 5: Graphs of Trig Functions
- Week 6: Graphs of Trig Functions
- Week 7: Graphs of Trig Functions
- Week 8: Trigonometric Identities & Equations
- Week 9: Trigonometric Identities & Equations
- Week 10: Trigonometric Identities & Equations
- Week 11: Trig Functions & Applications for Non-Right Triangles
- Week 12: Trig Functions & Applications for Non-Right Triangles
- Week 13: Vectors & Applications
- Week 14: Vectors, Polar & Parametric Equations
- Week 15: Polar & Parametric Equations
- Week 16: Final Exam

Part 1 & Part 2 approved by CRDAP on: 02 03 17

Part 2 approved by AD:

Date:

Part 2 approved by CRDAP Chair:

Date:

Rev02/15



# North Central Michigan College

## Master Course Syllabus

### **PART 3:**

**LUMINA DQP OUTCOMES** – Use this reference sheet for **PART 2** of Master Course Syllabus.

#### **Specialized Knowledge**

1. Describes the scope and principal features of the field of study, citing at least some of its core theories and practices, and offers a similar explication of at least one related field.
2. Illustrates contemporary terminology used in the field.
3. Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

#### **Broad Integrative Knowledge**

4. Describes how existing knowledge or practice is advanced, tested and revised
5. Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
6. Illustrates core concepts of the field while executing analytical, practical or creative tasks.
7. Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
8. Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
9. Describes the ways in which at least two disciplines define, address and interpret the importance of a contemporary challenge or problem in science, the arts, society, human services, economic life or technology.

#### **Intellectual Skills – Analytic Inquiry**

10. Identifies, categorizes and distinguishes among elements of ideas, concepts, theories and/or practical approaches to standard problems.

#### **Intellectual Skills – Use of Information Resources**

11. Identifies, categorizes, evaluates and cites multiple information resources necessary to engage in projects, papers or performance in his or her program.

#### **Intellectual Skills – Engaging Diverse Perspectives**

12. Describes how knowledge from different cultural perspectives would affect his or her interpretations of prominent problems in politics, society, the arts and/or global relations.

#### **Intellectual Skills – Communication Fluency**

13. Presents accurate calculations and symbolic operations, and explains how such calculations and operations are used in either his or her specific field of study or in interpreting social and economic trends.
14. Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

#### **Applied Learning**

15. Describes in writing at least one substantial case in which knowledge and skills acquired in academic settings are applied to a challenge in a non-academic setting; applies that learning to the question; and analyzes at least one significant concept or method related to his or her course of study in light of learning outside the classroom.
16. Locates, gathers and organizes evidence on an assigned research topic addressing a course-related question or a question of practice in a work or community setting; offers and examines competing hypotheses in answering the question.

#### **Civic Learning**

17. Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
18. Describes diverse positions, historical and contemporary, on selected democratic values or practices, and presents his or her own position on a specific problem where one or more of these values or practices are involved.
19. Takes an active role in a community context (work, service, co-curricular activities, etc.), and examines the civic issues encountered and the insights gained from the community experience.

The Degree Qualifications Profile was adopted by CRDAP: April 11, 2012