

Math 117 (MA 117C) Trigonometry Proposal

MATH 117 Equivalent

- 1. Sample syllabus** (Same as MATH 117 proposal).
- 2. Statement of how your course meets the Colonnade Plan's learning objectives.**

MA 117C: Trigonometry (3 hours) meets the five learning objectives included in the Quantitative Reasoning section of the Colonnade Plan. MA 117C students will learn to interpret, illustrate, and communicate mathematical and/or statistical ideas. Further, students will learn to model and solve problems. Students in MA 117C will be able to apply knowledge of the unit circle; trigonometric functions and graphs; trigonometric identities and equations; right triangle trigonometry; laws of sines and cosines; DeMoivre's Theorem; vectors and applications of trigonometry. Further, students will learn to model and solve problems appropriate for the field of study in majors of the sciences. Students with a Math ACT of 26 or higher will receive 3 hours credit for this requirement.

Learning Objective 1: Interpret information presented in mathematical and/or statistical forms.

Students in MA 117C learn to interpret information presented in mathematical and/or statistical forms by first learning to recognize the presence of trigonometric information such as functions, equations, graphs, tables, diagram, figures or descriptive text. Students will be able to accurately interpret how to use that information in the context of a given problem.

Learning Objective 2: Students will illustrate and communicate mathematical and/or statistical information symbolically, visually and/or numerically.

Students in MA 117C learn to illustrate and communicate mathematical information symbolically by learning when and how to use trigonometric expression, equation or function to express quantitative information.

Students in MA 117C learn to illustrate and communicate mathematical information visually by learning when and how to use a trigonometric graph, figure or diagram to express quantitative information.

Students in MA 117C learn to illustrate and communicate mathematical information numerically by learning when and how to use trigonometric tables to express quantitative information.

Learning Objective 3: Students will determine when computations are needed and execute the appropriate computations.

Students in MA 117C will determine when trigonometric computations are needed and execute the appropriate computations through the application of knowledge and comprehension of trigonometry to solve problems.

Learning Objective 4: Students will apply an appropriate model to the problem to be solved.

Students in MA 117C will apply an appropriate model to the problem to be solved by examining different mathematical models involving trigonometric functions, be able to choose the appropriate model and apply that model to successfully complete the applications.

Learning Objective 5: Students will make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis.

Students in MA 117C will make inferences, evaluate assumptions, and assess limitations in estimation modeling and/or statistical analysis from applications in engineering, geography, biology, business, astronomy, etc. Through the use of trigonometry, students are expected to make inferences on topics, evaluate the assumptions made, use estimation and assess any limitations for the model, and then successfully perform the correct trigonometric analysis for the model.

Brief description of how your department will assess this course's effectiveness.

For MA 117C, assessment will occur at the end of the semester. To assess the course objectives, each student will complete a problem that addresses the five learning objectives. A committee of at least three faculty members will select a sample and evaluate the common assessment problem that addresses the skills and concepts as stated in the learning outcomes. The committee will randomly collect 25% to 30% of the sample across all sections of MA 117C to help assess students' mastery of the learning outcomes. The following criterion will be used to assess student learning outcomes:

Each test question will be scored on scale of 0 to 5, using a scoring guide developed by the committee in conjunction with the department. A common rubric (5 -Excellent ; 4 - Good; 3 - Satisfactory; 2 - Poor; 0 and 1- Fail).

The goals will be as follows:

Satisfactory = at least 70% of students scored 3 or better

Unsatisfactory = under 70% of students scored 3 or better

4. If necessary, a list of any proposed revisions needed to bring you course in line with the Colonnade Plan. None