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| **Course Title/Number** | **MTH 122** Sec 106, CRN 2996 |
| **Semester/Year** | Fall 2016 |
| **Days/Time** | T, R 5 – 6:15 |
| **Location** | SH 511 |
| **Instructor** | Dr. Karen Mitchell |
| **Office** | CB132 |
| **Phone** | (304) 696-3042 |
| **E-Mail** | [mitchelk@marshall.edu](mailto:mitchelk@marshall.edu) (karenmitchellmu@gmail.com) |
| **Office Hours** | M, W 1-3; T, R 3–5  If these hours do not fit your schedule, please call me or send me an email so that we can arrange another time to discuss your questions. |
| **University Policies** | By enrolling in this course, you agree to the University Policies listed below. Please read the full text of each policy by going to [www.marshall.edu/academic-affairs](http://www.marshall.edu/academic-affairs) and clicking on “Marshall University Policies.” Or, you can access the policies directly by going to [www.marshall.edu/academic-affairs/policies/](http://www.marshall.edu/academic-affairs/policies/). Academic Dishonesty/Excused Absence Policy for Undergraduates/Computing Services Acceptable Use/Inclement Weather/Dead Week/Students with Disabilities/Academic Forgiveness/Academic Probation and Suspension/Academic Rights and Responsibilities of Students/Affirmative Action/Sexual Harassment |

**Course Description: From Catalog**

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| **MTH 122 – Plane Trigonometry:** 3 hrs. A study of the trigonometric functions, graphs of the trigonometric functions, identities, equations, inverse trigonometric functions, vectors, complex numbers, and applications.  (PR: at least 22 on Mathematics ACT or at least 520 on Mathematics SA, or a grade of C or higher in MTH 127 or MTH 130. |

**Course Objectives**:

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| To present a comprehensive development of trigonometry and some of the applications of trigonometry. To help prepare students for courses in applied calculus and analytic geometry. To help prepare students for study in areas such as physics, engineering, biology, chemistry, pharmacy, geology, and medicine. |

**The table below shows the following relationships: How each student learning outcome will be practiced and assessed in the course.**

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| **Course student learning outcomes** | **How students will practice each outcome in this course** | **How student achievement of each outcome will be assessed in this course** |
| Understand, and use effectively, all six trig functions, defined both by right triangles and also by the unit circle | group work, discussion, in-class tasks with and without technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |
| Graph each of the six trig functions on its extended domain, and know the features of each function | group work, discussion, in-class tasks with and without technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |
| Verify trig identities using proper mathematical techniques. | group work, discussion, in-class tasks with and without technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |
| Solve conditional equations which involve trig and/or inverse-trig functions. | group work, discussion, in-class tasks with technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |
| Given a side and two other values, find all possible triangles, if any. | group work, discussion, in-class tasks with and without technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |
| Understand vectors and polar-form complex numbers so that physics problems can be solved and so that products, quotients, powers and roots can be computed easily. | group work, discussion, in-class tasks with and without technology, response sheets (low-stakes writing), practice presentations, homework | exam questions, quiz questions, writing assignments, presentations, homework |

**Required Texts, Additional Reading, and Other Materials**

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| **REQUIRED MATERIALS:**   1. Trigonometry (4 E) by Mark Dugopolski 2. 3-ring binder (suggested) 3. Marshall computer account 4. Calculator with trig and inverse trig functions |

**Course Requirements/Due Dates**

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| **TESTS:** Test I – September 22 (tentative)  Test II – October 25 (tentative)  Test III - November 29 (tentative)  Final - Tuesday, December 13  **HOMEWORK:** *Homework problems* will be assigned at each class meeting. Some problems will be collected and graded. These will be due on the announced date. Other problems, like the introductory textbook activities, that are assigned to provide you with an opportunity to practice skills or examine concepts will not be collected. I will tell you at the time of the assignment if the problems are to be collected and graded. Since the homework problems are designed to help you prepare for tests and quizzes, you should always make sure you know how to do them. You may ask me questions about the homework assignments. You may discuss homework assignments with your classmates. It is, however, counterproductive for you to merely copy another student’s work. In *writing assignments* you will be asked to reach conclusions about problems from the text, the Web, or other situations. All writing assignments will be collected and graded. *Response sheets* are also always assigned points. *Class presentations* may include presentations to your partner or to the entire class. |

**Grading Policy**

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| **POINT VALUES:** Response Sheets: 5-10 pts. each  Announced Quiz: 20-50 pts. each  Writing assignments: 10-20 pts. each  Class presentation: 10-50 pts. each  Test: 100 pts. each  Homework: TBA  Final: 100 or 200 pts.  PROCEDURE USED TO DETERMINE GRADES: The total number of points you earn will be divided by the total number of points possible to determine your final percentage.  DEPARTMENTAL GRADING SCALE: 90 - 100 A  80 - 89 B  70 - 79 C  60 - 69 D  0 - 59 F |

**Attendance Policy**

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| **ATTENDANCE POLICY:** Since a significant amount of the material for the course is available only in class, attendance is imperative. You are responsible for all notes and assignments given during any absence. If you are absent when a response sheet, group activity, or other in-class assignment is given, it cannot be made up. If you are aware that you will be missing a test or an announced quiz, make arrangements to make it up before you leave. If some emergency forces you to miss an exam or quiz, see me as soon as you return to class. The Academic Affairs policy for excused absences can be accessed at <http://www.marshall.edu/academic-affairs/?page_id=802> as well as other university-wide policies. If you have an excused absence for a class assignment that cannot be made up, an alternate assignment will be made. |

**Course Schedule**

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| **COURSE OUTLINE:**  I. Algebra review.  a. Real Numbers.  b. Solutions of equations.  c. Graphing.  d. Lines in the plane.  e. Functions and their graphs.  f. Combinations of functions and inverse functions.  II. Trigonometric functions.  a. Measurement of angles.  b. Trigonometric functions and the unit circle.  c. Trigonometric functions and right triangles.  d. Graphs of trigonometric functions.  e. Inverse trigonometric functions.  f. Applications.  III. Analytic trigonometry.  a. Identities and their uses.  b. Verifying identities.  c. Solutions of trigonometric equations.  d. Sum and difference formula.  e. Double-angle, half-angle, and product-sum formula.  IV. Applications.  a. Law of sines.  b. Law of cosines.  c. Areas of triangles.  d. Vectors in the plane.  e. Applications.  V. Complex numbers.  a. Definition and operations.  b. Graphical representation.  c. Complex solutions of equations.  d. Trigonometric form of a complex number.  e. DeMoivre’s theorem.  f. Roots of complex numbers and their graphical representation |