Trigonometry – Math 144  
2 Credits  
Dual Enrollment  

Instructor Lynn Payne  
phone # 654 - 2030  
E-mail annie11@pmt.org

Course description:  
Right triangle and circular function approaches to trigonometry, graphs of trig. functions, trig. identities,  
conditional equations, right and non-right triangle applications of trigonometry, inverse trig. functions,  
trigonometry of complex numbers including DeMoivre’s Theorem, polar coordinates and equations,  
parametric equations

Pre-requisites: MATH 143 with a grade of “C” or better or Math Placement Test

Required Textbook and Supplies:  
• Trigonometry, sixth edition, by Larson/Hostetler  
• A calculator with LOG and EXPONENTIAL functions, but not a graphing calculator.  
• Graph paper

Course Objectives:  
Students will demonstrate a working knowledge of the following processes and concepts:  
• Angles  (standard position, positive angle, negative angle, degree measure in degrees-minutes-seconds as well as decimal degrees, radian measure, coterminale angles, reference angles,  
supplementary, complementary)  
• Trig functions in right triangles  (trig function definitions using opposite side, adjacent side and  
hypotenuse of right triangle; exact trig values of 30°, 60°, 90° and 45°-45°-90° triangles; use  
calculator to evaluate trig function values in degrees and radians; solve right triangles including  
application problems)  
• Trig functions of any angle  (use the x-y-r definitions to find trig function values, signs of the trig  
functions within each quadrant, find and use reference angles)  
• Trig functions of real numbers  (use the unit circle to find trig function values, properties of the  
trig functions (domain, range, symmetries, period)  
• Basic trig identities  (Reciprocal, Quotient or Ratio, Pythagorean, rearrange basic identities,  
simplify trig expressions)  
• Graph the trig functions  (period, amplitude, graph sin, cos, tan, cot, csc and sec functions  
without the use of a graphing calculator and using a graphing calculator, transformations of the  
basic trig graphs (horizontal and vertical shifts, vertical stretch/shrink, change of period, graph  
using addition of ordinates, given the graph of a trig function write the equation)  
• Inverse trig functions  (restrictions on the domain and range, how graph of inverse is related to  
trig function graph, find exact values using triangles, evaluate composition of a trig function and  
an inverse trig function, evaluate inverse trig functions using a calculator)  
• Verify trig identities  (include techniques of changing all to sin and cos, factoring, multiplying by  
a conjugate, etc., use graphs to decide if a given equation is an identity, then prove algebraically)  
• Use trig identities  (Sum and Difference Identities for sin, cos, tan, Cofunction Identities, Double-  
Angle Identities, Half-Angle Identities, Product to Sum Identities, Sum to Product Identities)  
• Solve trig equations  
• Applications of trig  (Linear velocity, angular velocity, arc length, area of a sector, Law of Sines,  
Law of Cosines, area of a triangle, trigonometric form of complex numbers (compute absolute  
value, product, quotient), DeMoivre’s Theorem)  
• Parametric equations  (eliminate the parameter, graph)  
• Polar coordinates and equations  (convert to and from rectangular form, graph)
These additional, **optional topics** may be covered by some instructors:

- Algebraic operations on vectors
- Geometric interpretation of vectors

**Policies and procedures:**

- District #151 attendance policy is in effect. Lost credit for absences over 5 days per semester.

**Outcome Assessments:**

- Students will be asked to complete a student evaluation at the end of the semester. Also, regular informal feedback will be solicited in an effort to improve the class as we go along. Chapter tests and a comprehensive final exam will be used to assess how well students achieve the course objectives.

- As part of departmental analysis of outcomes in this course and its place in the Mathematics program, student completion of the pre-requisite, success in the current course, success in subsequent courses and student satisfaction will be reviewed by the instructor. A report containing this information will be submitted by department faculty to determine what, if any, changes can be made to improve the course in terms of content, focus, and instruction.

**Grading Procedure:**

- Your grade will be an average of your test grades. You will be able to drop your lowest of 6 test grades. The final exam is comprehensive and is not a test that can be dropped.
  
<table>
<thead>
<tr>
<th>Percentage</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90% - 100%</td>
<td>A</td>
</tr>
<tr>
<td>80% - 89%</td>
<td>B</td>
</tr>
<tr>
<td>70% - 79%</td>
<td>C</td>
</tr>
<tr>
<td>60% - 69%</td>
<td>D</td>
</tr>
<tr>
<td>Below 59%</td>
<td>F</td>
</tr>
</tbody>
</table>

**Aids available to you for this course:**

- Tutoring is available at the designated time and place offered by the college. Lectures are taped so those individuals can review the material over television, a schedule for these lectures will be handed out at the first of the semester.

**Disabilities:**

- If you have a disability that may affect your work in this class and for which you may require reasonable accommodation(s), the matter must be brought to me.