COURSE SYLLABUS

Course Number: MAC 1114  
Course Title: Trigonometric Functions

Prerequisite(s): College Algebra

Course Credit: 3 hours

Course Hours: Mondays, Wednesdays, & Fridays or on Tuesdays & Thursdays

College: Arts & Sciences  
Department: Mathematics

Required Text(s): *Trigonometry, Eighth Edition* by Lial, Hornsby, & Schneider with web access to [www.MyMathLab.com](http://www.MyMathLab.com) for homework, quizzes

Supplies:

Faculty Name: Dr. Bruno Guerrieri  
Term and Year: Fall 2009

Office Location:  
Telephone:

e-mail:

Office Hours | Monday | Tuesday | Wednesday | Thursday | Friday | Saturday
---|---|---|---|---|---|---

Course Description

This course is designed to assist students in developing skills to investigate trigonometric functions, properties, and graphs, inverse trigonometric functions, properties, and graphs, trigonometric identities, and conditional trigonometric equations. Also, students will examine solutions to triangles, vector algebra, parametric equations, and polar coordinates.

Conceptual Framework

The Conceptual Framework in the Professional Education Unit (PEU) at Florida A&M University is an integrated approach to providing educational experiences that result in exemplary professional educators. The Framework is comprised of six themes with the mission of developing high quality classroom teachers, administrators and support personnel. The term “exemplary” refers to the kind of graduates the PEU strives to produce. The figure below provides a diagram of the Exemplary Professional Conceptual Framework.

The Conceptual Framework for the FAMU Professional Education Unit is grounded in a combination of directed, constructivist, developmental, and social learning theories derived form the writings of system theorists, educational philosophers, social scientists, practitioner and developmental theorists. Concepts from these writers and from the varied educational learned societies help form the knowledge base for the unit’s curriculum components and principles of its Conceptual Framework.

F=Florida Educator Accomplished Practices Standards (FEAPS)  
I=Interstate New Teacher Assessment and Support Consortium Standards (INTASC)

(K)=Knowledge  
(S)=Skill  
(D)=Disposition

Approved/Revised 10/30/07
• CF 2
• Through this focal area, the FAMU professional education candidate will:

<table>
<thead>
<tr>
<th>CF: 2.1 (S)</th>
<th>Use of available technology and software to support student learning.</th>
<th>F: 4,12</th>
<th>I: 6</th>
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<tr>
<td>CF: 2.3 (K)</td>
<td>Know fundamental concepts in technology.</td>
<td>F: 12</td>
<td>I: 1,6</td>
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<tr>
<td>CF: 2.4 (K)</td>
<td>Understand fundamental concepts in technology.</td>
<td>F: 2,12</td>
<td>I: 6</td>
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<tr>
<td>CF: 2.5 (S)</td>
<td>Use fundamental concepts in technology.</td>
<td>F: 12</td>
<td>I: 6</td>
</tr>
</tbody>
</table>

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CRITICAL THINKING

• CF4

• Through this focal area, the FAMU professional education candidate will:

| CF: 4.1 (K) | Understand a variety of instructional/professional strategies to encourage student development of critical thinking and performance. | F:4,7 | I: 4 |
| CF: 4.4 (K) | Acquire performance assessment techniques and strategies that measure higher order thinking skills of student. | F:1,4 | I: 1,8 |
| CF: 4.5 (S) | Demonstrate the use of higher order thinking skills. | F: 8 | I: 4 |

PROFESSIONALISM

• CF 5

• Through this focal area, the FAMU professional education candidate will:

| CF: 5.1 (K) | Know the content | F: 8 | I: 1 |

Overall Goals of the Course

The overall goals of the course are to develop the ability of the student to help the student make a smooth transition from the sense of algebra to the applications of Trigonometry, to help the student understand the practical application of trigonometric relationships to real world situations, and to build a foundation for the use of the trigonometric functions in higher mathematics.

Specific Behavioral Objectives

To successfully complete Trigonometric Functions, the student will be required to meet the following objectives with at least 70% proficiency. At the end of the course the student will be able to:

1. Define and use trigonometric functions
2. Solve applied problems involving angles and triangles
3. Graph trigonometric functions
4. Graph inverse trigonometric functions
5. Solve conditional trigonometric equations
6. Use trigonometry to solve applications
7. Find powers and roots of complex numbers
8. Solve and graph polar equations
9. Solve and graph parametric equations

National, State, and PEU Standards Addressed in the Course

Interstate New Teacher Assessment and Support Consortium (INTASC) Standards

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**Standard 1: Subject Matter**
The teacher understands the central concepts, tools of inquiry, and structures of the discipline(s) he or she teaches and can create learning experiences that make these aspects of subject matter meaningful for students.

**Standard 6: Communication**
The teacher uses knowledge of effective verbal, nonverbal, and media communication techniques to foster active inquiry, collaboration, and supportive interaction in the classroom.

**Standard 8: Assessment**
The teacher understands and uses formal and informal assessment strategies to evaluate and ensure the continuous intellectual, social and physical development of the learner.

**Professional Organization/Learned Society Standards**

**NCATE/NCTM Program Standards for Secondary Mathematics:**

**Standard 1: Knowledge of Mathematical Problem Solving**
Candidates know, understand, and apply the process of mathematical problem solving.

**Standard 3: Knowledge of Mathematical Communication**
Candidates communicate their mathematical thinking orally and in writing to peers, faculty, and others.

**Standard 4: Knowledge of Mathematical Connections**
Candidates recognize, use, and make connections between and among mathematical ideas and in contexts outside mathematics to build mathematical understanding.

**Standard 5: Knowledge of Mathematical Representation**
Candidates use varied representations of mathematical ideas to support and deepen students’ mathematical understanding.

**Standard 6: Knowledge of Technology**
Candidates embrace technology as an essential tool for teaching and learning mathematics.

**Standard 9: Knowledge of Number and Operation**
Candidates demonstrate computational proficiency, including a conceptual understanding of numbers, ways of representing number, relationships among number and number systems, and meanings of operations.

**Standard 11: Knowledge of Geometries**
Candidates use spatial visualization and geometric modeling to explore and analyze geometric shapes, structures, and their properties.

**Florida Educator Accomplished Practices (FEAPs)**

**ASSESSMENT**
The preprofessional teacher collects and uses data gathered from a variety of sources. These sources include both traditional and alternate assessment strategies. Furthermore, the teacher can identify and match the students’ instructional plans with their cognitive, social, linguistic, cultural, emotional, and physical needs.

**COMMUNICATION**

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The preprofessional teacher recognizes the need for effective communication in the classroom and is in the process of acquiring techniques which she/he will use in the classroom.

**CRITICAL THINKING**
The preprofessional teacher is acquiring performance assessment techniques and strategies that measure higher order thinking skills in students and is building a repertoire of realistic projects and problem-solving activities designed to assist all students in demonstrating their ability to think creatively.

| Assignment | Behavioral objectives | INTASC Standards | Professional Organization | FEAPs | FTCE SAE | PEU Conceptual Framework |

**KNOWLEDGE OF SUBJECT MATTER**
The preprofessional teacher has a basic understanding of the subject field and is beginning to understand that the subject is linked to other disciplines and can be applied to real-world integrated settings. The teacher’s repertoire of teaching skills includes a variety of means to assist student acquisition of new knowledge and skills using that knowledge.

**TECHNOLOGY**
The preprofessional teacher uses technology as available at the school site and as appropriate to the learner. She/he provides students with opportunities to actively use technology and facilitates access to the use of electronic resources. The teacher also uses technology to manage, evaluate, and improve instruction.

*Florida Teacher Certification Examination (FTCE) Subject Area Examination (SAE) Competencies and Skills*

**3 Knowledge of geometry from a synthetic perspective**
10. Apply the Pythagorean theorem or its converse.
11. Use 30-60-90 or 45-45-90 triangle relationships to determine the lengths of the sides of triangles.

**5. Knowledge of trigonometry**
1. Identify equations of graphs of circular/trigonometric functions and their inverses.
2. Solve problems involving circular/trigonometric function identities.
3. Interpret the graphs of trigonometric functions (e.g., amplitude, period, phase shift).
4. Solve real-world problems involving triangles using the law of sines or the law of cosines.
5. Use tangent, sine, and cosine ratios to solve right triangle problems.

**11 Knowledge of mathematics as communication**
1. Identify statements that correctly communicate mathematical definitions or concepts.
2. Interpret written presentations of mathematics.
3. Select or interpret appropriate concrete examples, pictorial illustrations, and symbolic representations in developing mathematical concepts.

**13 Knowledge of mathematical connections**
1. Identify equivalent representations of the same concept or procedure (e.g., graphical, algebraic, verbal, numeric).

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<table>
<thead>
<tr>
<th>Identity Quiz (Take-Home Quiz)</th>
<th>Solve problems involving circular/trigonometric function identities</th>
<th>INTASC: 1.0, 8.0</th>
<th>NCTM: 1.1, 1.3, 3.2, 4.1, 11.5, 11.6</th>
<th>FEAPs: 1.1, 4.1, 4.1a, 4.1d, 4.1g, 8.1, 8.1a, 8.1b</th>
<th>FTCE: 5.1, 5.2, 5.3, 5.5, 11.1, 11.2, 11.3</th>
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<td>Intercept / Identity Quiz (Take-Home Quiz)</td>
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<td>Special Angles Quiz (Take-Home Quiz)</td>
<td>Use 30-60-90 or 45-45-90 triangle relationships to determine the lengths of the sides of triangles</td>
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**Teaching Methods**

Teaching method will be lecture.

**Course Evaluation**

Your course grade will be:
- Four Tests 400 points
- MyMathLab Homework 70 points
- MyMathLab Quizzes 70 points
- Class work including quizzes 60 points
- Final Examination 200 points

**Grading**

The scale will be:
- A → at least 720 points
- B → at least 640 but less than 720 points

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C → at least 560 but less than 640 points  
D → at least 480 but less than 560 points  
F → fewer than 480 total points

Course Policies

Policy Statement on Non-Discrimination  It is the policy of Florida Agricultural and Mechanical University to assure that each member of the University community be permitted to work or attend classes in an environment free from any form of discrimination including race, religion, color, age, disability, sex, marital status, national origin, veteran status and sexual harassment as prohibited by state and federal statutes. This shall include applicants for admission to the University and employment.

Academic Honor Policy  The University's Academic Honor Policy is located in the FANG Student Handbook, under the Student Code of Conduct- Regulation 2.012 section, beginning on page 55-56.

ADA Compliance  To comply with the provisions of the Americans with Disabilities Act (ADA), please advise instructor of accommodations required to insure participation in this course. Documentation of disability is required and should be submitted to the Learning Development and Evaluation Center (LDEC). For additional information please contact the LDEC at (850) 599-3180.

References


www.coursecompass.com  
www.ncate.org  
www.fldoe.org

Tentative Course Calendar

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**FINAL EXAM**

Dec

Time & Location to be announced.

All tests, quizzes, and other papers that are turned in to be graded will be in pencil. Any paper turned in that is not in pencil will NOT be graded.

Fall 2009

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