# Course Syllabus for Plane Trigonometry
# University of Arkansas Rich Mountain
# Spring 2021

**Instructor Name:** Ron Webb --- B.S. Mathematics, Sam Houston State University;
ME, Southeastern Oklahoma State University

**Office Location:** Spencer 254

**Office Hours:** As posted (varies)

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**Cell Phone:** 479-234-2267

**Time/Location**: College Trigonometry, MTH 213, Online

**Prerequisites**: A grade of "C" or better in MTH203 College Algebra

**Text**: *Trigonometry*, Mark Dugopolski, Addison Wesley, Pearson Education, Copyright 2003, ISBN # 0-201-70338-6.

**Comments on Textbook:** This textbook is rich in examples that will effectively help you on your homework. Problems are outlined in a step by step format which will help you understand major concepts. Key ideas and concepts are highlighted to allow you to focus on the major points of each lesson. Emphasis is placed on using graphical, numerical, and analytic points of view while solving real life applications of concepts.

**Course Description**: This course is a study of trigonometric functions and their graphs, identities, solving conditional trigonometric equations, applications, complex numbers, polar coordinates, and parametric equations. Heavy emphasis is placed on graphical, numerical, and analytic methods of solving applications.

**Program Outcomes:** The knowledge and critical thinking skills acquired in the general education component enable students to analyze problems, to arrive at intelligent conclusions, and to make reasoned choices in their professional and personal lives.

- Use computational mathematics, algebraic operations, and their practical applications to solve problems which they encounter at home and the workplace.
- Possess basic technological skills to identify, locate, and process information.

**Rationale:** An objective of post-secondary education is to provide a core of knowledge that is shared with most educated people. By studying and developing a deeper understanding of mathematical computations, students can better analyze, problem solve, and prepare critical thinking strategies for real world scenarios. Technological skills with the graphing calculator are necessary for future math courses.

**Nature of the Course**: The class will be taught using a combination of lecture, group interaction, question and answer approach, and independent study. New topics will be demonstrated using a typed note-taking guide, document camera or Smartboard, and TI 84+ graphing calculator. Lectures will be recorded and available online for student review. The notetaking guide and practice exams are available on the portal. Students are strongly encouraged to discuss concepts and examples as opportunities are presented during instructor presentation or during Zoom sessions with the instructor. It is the student's responsibility to inform the instructor when a concept is confusing or otherwise unclear.

**Course Objectives and Expected Student Learning Outcomes:**

Upon successful completion of MTH 213 College Trigonometry, the student should be able to:

1. Perform and solve basic unit circle and right triangle problems using appropriate vocabulary and technology.

2. Demonstrate an understanding of the applications of trigonometry.

3. Appropriately use technology to supplement and enhance conceptual understanding, visualization, and inquiry.

4. Synthesize information from a variety of sources to solve problems and interpret results.

5. Demonstrate understanding of the graphs of trigonometric functions using graphing calculators and graphing by hand.

6. Manipulate and solve trigonometric equations using identities.

7. Solve conditional trigonometric equations.

8. Solve polar equations and graph equations using polar coordinates.

**Course Requirements / Evaluation (Grading):**

**Tests** are 40% of your final grade. Five chapter tests are scheduled.

**Homework** is 40% of your final grade.

**Final Exam** is 20% of your final grade. The final exam is comprehensive. Problems are similar to chapter test problems.

**Grades** are assigned on the basis of the following percentage scale:

| | | | | |
|---|---|---|---|---|
| 90 – 100 A | 80 – 89 B | 70 - 79 C | 60 - 69 D | 0 - 59 F |

**Supplies Needed for daily work:** TI-83/84 Calculator supplied by UA Rich Mountain as needed, 3-ring notebook, college rule 3 hole paper, graph paper, cardboard folder, mechanical pencils with extra erasers, yellow highlighter, small pack colored pencils, small ruler or straight edge.
**Criteria for Credit:** Homework must be neat and complete. Each problem assigned has three parts: 1) Q: the original problem complete with figures drawn, 2) W: all steps or an explanation of how to arrive at the correct answer, and 3) A: the final answer. ***Answers alone are not acceptable***. Use pencils and straight edge paper; ***no ink or ruffles please***. Write the lesson topic at the top of the first page. Label each page with your name and lesson number in the top right hand corner. Work in two columns if possible. Box final answers with a yellow highlighter. Leave at least one blank line between problems. All graphs are to be accurately sketched on graph paper with all parts properly labeled and all work for the problem shown on the **same page** as the graph. For immediate feedback, you may check your answers for most assigned problems in the back of the book. *You will not receive credit for any problems not meeting the criteria for credit described above.*

I will email your assignments and chapter reviews and tests along with due dates on the dates in the included schedule found below.

All assignments are due by **midnight** on their due date as assigned.

All chapter exams are due by **midnight** on the date they are assigned.

All homework or exams can be emailed or texted To Mr. Webb at any of the three email addresses or phone number given above. You may also submit homework or exams through MOODLE. I welcome any questions at any time via the same email or texts.

**UA Rich Mountain Credit Hour Calculator:** Success in this class demands good attendance, good listening and note-taking skills, practicing by doing assigned homework problems daily, sufficient practice in and out of class to become very proficient with your graphing calculator, and concentrated study before tests and final exam. For every course credit hour, you should expect to spend at least three clock hours per week of concentrated attention on course-related work, including but not limited to time attending class, as well as out-of-class time spent completing homework, seeking help from instructor or tutors, preparing for upcoming quizzes/tests/exam, reviewing material, problem solving, and organizing your notebook. For a three-hour course, a typical student should expect to spend at least nine hours per week dedicated to this course. This includes the time spent in class. Please see credit hour calculator attached to end of syllabus.

**Attendance / Make-up Policy**: No make-up exams will be given. If you miss an exam, the missing grade will be replaced by the final exam score at the end of the course. Deliberately missing an exam is not advised due to the comprehensive nature of the final exam and the possibility of missing a future exam. The student is responsible for instruction missed during class by studying

the material in the book, seeking help from the teacher and/or student support services, and by getting class notes from the teacher or another student.

**Cell Phones:** The use of cell phones in the classroom is prohibited. Turn cell phones off during school hours. All cell phones will be taken up during exams.

**Computer and On-Campus Resources:** Computer labs with printers are available in several places on campus including the Johnson Learning Commons. UA Rich Mountain offers students assistance with quality tutors available in the Student Support Services (SSS) and Learning Enrichment and Counseling Center (LEAC) in the Johnson Learning Commons. You may access www.tutor.com/uarichmountain nights and weekends when SSS is not available.

**Academic Dishonesty**: Any suspicion of academic dishonesty will result in no credit for the paper in question.

**UA RICH MOUNTAIN Mission:** UA Rich Mountain exists to provide all citizens of the Ouachita Mountain Region with exemplary educational and enrichment opportunities to improve the quality of life and standard of living.

**ADA Statement**: It is the policy of UA Rich Mountain to accommodate students with disabilities, pursuant to federal law, state law, and the college's commitment to equal educational opportunities. Any student with a disability who needs accommodations, (ex: seating placement, examinations, or access to information on the web), should inform the Vice President of Student Affairs at the beginning of the semester. The Vice President of Student Affairs will contact the faculty member as to the accommodations needed for the course. To contact the Vice President of Student Affairs, students seeking accommodation should go to the Tower Room, located in the Maddox Building or call the College at 479-394-7622, ext. 1400.

**Arkansas Clean Air Act**: In compliance with the Arkansas Clean Air Act, UA Rich Mountain is a smoke and tobacco free facility. Students and guests are to refrain from the use of all tobacco products while on campus.

**Student Misconduct**: Students committing misconduct are subject to disciplinary sanction(s) and/or restrictions. Misconduct or prohibited behavior includes, but is not limited to endangerment, harassment, disruption, sexual misconduct, illegal drugs and/or alcohol, fire or safety issues, gambling, property violations, computer violations or other violations as listed in the UA Rich Mountain catalog.

**Topical Course Outline:**

Chapter 1: Angles and the Trigonometric Functions

1. Angles and Degree Measure
2. Radian Measure, Arc Length, and Area
3. Angular and Linear Velocity
4. The Basic Trigonometric Functions
5. The Fundamental Identity and Reference Angles
6. Right Triangle Trigonometry

Chapter 2: Graphs of the Trigonometric Functions

1. Graphs of the sine and Cosine Functions
2. The General Sine Wave
3. Graphs of the Tangent and Cotangent Functions
4. Graphs of the Secant and Cosecant Functions
5. Combining Functions

Chapter 3: Trigonometric Identities

1. Basic Identities
2. Verifying Identities
3. Sum and Difference Identities for Cosine
4. Sum and Difference Identities for Sine and Tangent
5. Double-Angle and Half-Angle Identities
6. Product and Sum Identities

Chapter 4: Solving Conditional Trigonometric Equations

1. The Inverse Trigonometric Functions
2. Basic Sine, Cosine, and Tangent Equations
3. Multiple Angle Equations
4. Trigonometric Equations of the Quadratic Type

Chapter 5: Applications of Trigonometry

1. The Law of Sines
2. The Law of Cosines
3. Area of a Triangle
4. Vectors

## Credit Hour Requirement Calculator

| **Course Information** | | | | |
|---|---|---|---|---|
| Department, Course Number | Mathematics | | | MTH203 |
| Course Title | College Trigonometry | | | |
| Credit Hours | 3 | | | |
| Mode of Delivery | Online | | | |
| Weeks in Part of Term | 4 | | | |
| Level of Reading Material | Advanced/Scientific/Technical (2) | | | 2 |
| Reading Level of Students | Average Student (2) | | | 2 |
| Average Pages per Hour | 11 | | | |

| | | *Enter either week or term, not both* | | |
|---|---|---|---|---|
| **Contact Hours** | | **Hours/Week** | **Hours/Term** | **Total Hours** |
| Lecture/Recitation | | | 45 | 45 |
| | **Pages Asg'd** | **Hours/Week** | **Hours/Term** | |
| **Syllabus Items** | | | | |
| Weekly Homework Assignments | | 4 | | 60 |
| Prepare for Chapter Tests | | | 12 | 12 |
| Prepare for Final exam | | | 4 | 4 |
| Study Assigned Examples | 87 | | | 7.9 |
| **Total Hours** | | | | 128.9 |
| **Required Hours** | | | | 112.5 |
| **Difference** | | | | Ok + 16.4 |

**Proposed Schedule**: **College Trigonometry Spring 2021**

| Week | Begin Date | Section | Page | Assignment | # Prob |
|---|---|---|---|---|---|
| 1 | 1/11 | 1.1 | 52 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93 | 24 |
| | 1/13 | 1.2 | 62 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93 | 24 |
| 2 | 1/18 | 1.3 | 69 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39 | 20 |
| | 1/20 | 1.4 | 80 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 89 | 22 |
| 3 | 1/25 | 1.5 | 92 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 35, 37, 39, 41, 43, 45, 47, 57 | 17 |
| | 1/27 | 1.6 | 104 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51 | 26 |
| 4 | 2/1 | | | **EXAM CHAPTER 1** | 25 |
| | | | | | |
| | 2/3 | 2.1 | 122 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81 | 21 |
| 5 | 2/8 | 2.2 | 133 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49 | 13 |
| | 2/10 | 2.3 | 141 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53 | 14 |
| 6 | 2/15 | 2.4 | 152 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 57, 61 | 13 |
| | 2/17 | 2.5 | 159 | #1, 5, 9, 13, 37, 38, 39, 40, 41, 42 | 10 |
| 7 | 2/22 | | | **EXAM CHAPTER 2** | 25 |
| | | | | | |
| | 2/24 | 3.1 | 173 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65 | 17 |
| 8 | 3/1 | 3.2 | 181 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61 | 16 |
| | 3/3 | 3.3 | 190 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61 | 16 |
| 9 | 3/8 | 3.4 | 196 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49 | 13 |
| | 3/10 | 3.5 | 204 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 51, 53, 55, 57 | 13 |
| 10 | 3/15 | 3.6 | 215 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29 | 15 |
| | 3/17 | | | **EXAM CHAPTER 3** | 25 |
| | | | | | |
| 11 | 3/29 | 4.1 | 233 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77 | 20 |
| | 3/31 | 4.2 | 247 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69 | 18 |
| 12 | 4/5 | 4.3 | 253 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53 | 14 |
| | 4/7 | 4.4 | 260 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41 | 11 |
| 13 | 4/12 | | | **EXAM CHAPTER 4** | 25 |
| | | | | | |
| | 4/14 | 5.1 | 277 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 | 16 |
| 14 | 4/19 | 5.2 | 286 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37 | 19 |
| | 4/21 | 5.3 | 294 | #1, 3, 5, 7, 9. 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31 | 16 |
| 15 | 4/26 | 5.4 | 308 | #1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 75, 77 | 17 |
| | 4/28 | | | **EXAM CHAPTER 5** | |
| | | | | | |
| 16 | 5/4 | | | **FINAL EXAM (CHAPTERS 1 – 5)** | 25 |

**Important Dates:**

| | |
|---|---|
| January 11 (M) | Classes start |
| March 8 (M) | Mid-semester grades due |
| March 22-26 | Spring Break (No classes, campus closed) |
| May 4 (T) | Final Exam |