Math 3310: Introduction to Problem Solving

Disclaimer
This syllabus is current and accurate as of its posting date, but will not be updated. For the most complete and up-to-date course information, contact the instructor.

Instructor Information
Dr. Dionne T. Bailey
Office: MCS 220G
Phone: 325-486-5425
Email: Dionne.Bailey@angelo.edu

Office Hours

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<td>Monday</td>
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<td>Tuesday</td>
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<td>Wednesday</td>
<td>11:00-12:00; 2:00-4:00</td>
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<td>Thursday</td>
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Tests
We will have four cumulative tests and a cumulative final examination. The exact dates and coverage of these tests will be announced in class. However, as a planning guide, you may expect to take the first test during the fourth week of classes, the second test during the eighth week of classes, the third test during the twelfth week of classes, and the fourth test during the fourteenth week of classes. The final exam will be held as specified in the course schedule. I do not intend to give makeup tests. That means you need to be present and ready to do your best each day, but especially on test days.

Daily Work
Daily work will consist primarily of homework problems from the textbook, supplemented by some in-class quizzes. Late work, including in-class quizzes for which you were absent, is not accepted.

Grade Calculations
Your grade on the daily work will count for 10%, your test average will count for 60%, and the cumulative final examination will count for 30%; then the usual grades (90 and above \( \leftrightarrow \) A, 80-89 \( \leftrightarrow \) B, 70-79 \( \leftrightarrow \) C, 60-69 \( \leftrightarrow \) D, and less than 60 \( \leftrightarrow \) F).

Student Learning Outcomes
1. **The students will demonstrate factual knowledge including the mathematical notation and terminology used in this course.** Learn the vocabulary, symbolism, and basic definitions used in this course including definitions and terminology used in algebra;
trigonometry; analytic geometry; transformational geometry; finance; linear programming; and progressions.

2. **The students will describe the fundamental principles including laws and theorems arising from concepts covered in this course.** Become familiar with the laws and formulas that result directly from the definitions used in algebra; trigonometry; analytic geometry; transformational geometry; finance; linear programming; and progressions.

3. **The students will apply course material along with techniques and procedures covered in this course to solve problems.** Use the facts, formulas, and techniques learned in this course to solve application problems in a variety of fields to include physics; chemistry; business; life sciences; and social sciences.

4. **The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Acquire a level of proficiency in the fundamental concepts and applications necessary for further study in academic fields requiring a solid background in mathematics as a prerequisite, or for work in occupational fields requiring a solid background in mathematics. These fields might include teaching mathematics in the secondary schools; engineering; physics; business; life sciences; and social sciences.

**Required Texts and Readings**


**Subject Matter**

0. **Prerequisites.** Real Numbers; Solving Equations Graphically, Numerically, and Algebraically; Complex Numbers.

1. **Functions and Graphs.** Modeling with Functions.

2. **Polynomial Functions, Power and Rational Functions.** Linear and Quadratic Functions and Modeling; Power Functions with Modeling; Real Zeros of Polynomial Functions; Complex Zeros and the Fundamental Theorem of Algebra; Transformations of the Reciprocal Function.

3. **Exponential, Logistic, and Logarithmic Functions.** Mathematics of Finance.

4. **Trigonometric Functions.** Graphs of Sine and Cosine: Sinusoids; Solving Problems with Trigonometry.

5. **Analytic Trigonometry.** Fundamental Identities; Proving Trigonometric Identities; Double Angle Identities; The Law of Sines; The Law of Cosines.

6. **Applications of Trigonometry.** Vectors in the Plane; Dot Product of Vectors; De Moivre’s Theorem and nth Roots.

7. **Systems of Equations and Matrices.** Solving Systems of Two Equations; Systems of Inequalities in Two Variables; Linear Programming.

8. **Analytic Geometry in Two and Three Dimensions.** Definition of a Parabola; Reflective Property of a Parabola; Definition of an Ellipse; Reflective Property of an Ellipse; Definition of a Hyperbola; Reflective Property of a Hyperbola; Eccentricity.
9. **Discrete Mathematics.** The Binomial Theorem; Probability; Sequences; Series, Statistics and Data (Graphical); Statistics and Data (Algebraic).

**Prerequisite**
Mathematics 2312 or 2412, 2313.

**Course Schedule**
The subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.

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<td>2</td>
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<td>10</td>
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<td>11</td>
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<td>12</td>
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<td>15</td>
<td>Sections 9.7, 9.8</td>
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**Student Disability Services**
ASU is committed to the principle that no qualified individual with a disability shall, on the basis of disability, be excluded from participation in or be denied the benefits of the services, programs or activities of the university, or be subjected to discrimination by the university, as provided by the Americans with Disabilities Act of 1990 (ADA), the Americans with Disabilities Act Amendments of 2008 (ADAAA), and subsequent legislation.

The Office of Student Affairs is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability, and it is the student’s responsibility to initiate such a request by contacting:

**Dallas Swafford**  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
dallas.swafford@angelo.edu
Title IX
Angelo State University is committed to the safety and security of all students. If you or someone you know experience sexual harassment, sexual assault, domestic or dating violence, stalking, or discrimination, you may contact ASU’s Title IX Coordinator:

Michelle Boone
Director of Title IX Compliance
325-486-6357
michelle.boone@angelo.edu

Student Absence for Observance of Religious Holy Days
A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. The full details can be found in ASU Operating Policy OP 10.19 Observance of Religious Holy Days

Incomplete Grade Policy
It is policy that incomplete grades be reserved for student illness or personal misfortune. Please contact faculty if you have serious illness or a personal misfortune that would keep you from completing course work. Documentation may be required. See ASU Operating Policy 10.11 Grading Procedures for more information.

Student Conduct Policies

Academic Integrity
Students are expected to maintain complete honesty and integrity in all work. Any student found guilty of any form of dishonesty in academic work is subject of disciplinary action and possible expulsion from ASU.

The College of Science and Engineering adheres to the Statement of Academic Integrity

Plagiarism
Plagiarism is a serious topic covered in ASU’s Academic Integrity policy in the Student Handbook. Plagiarism is the action or practice of taking someone else’s work, idea, etc., and passing it off as one’s own. Plagiarism is literary theft.

In your discussions and/or your papers, it is unacceptable to copy word-for-word without quotation marks and the source of the quotation. It is expected that you will summarize or paraphrase ideas giving appropriate credit to the source both in the body of your paper and the reference list.

Papers are subject to be evaluated for originality via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center
Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

General Policies Related to this Course

All students are required to follow the policies and procedures presented in these documents:

- [Angelo State University Student Handbook](http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)
- [Angelo State University Catalog](http://www.angelo.edu/content/files/14197-op-1011-grading-procedures)
- [Community Policies/Academic Integrity](http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php)
- [Academic Honesty](http://www.angelo.edu/dept/writing_center/academic_honesty.php)
- [Student Handbook](http://www.angelo.edu/student-handbook/)
- [Catalogs](http://www.angelo.edu/catalogs/)