Math 3310: Introduction to Problem Solving

Modifications to the Syllabus
This syllabus, including grade evaluation and course schedule, is subject to modification. In particular, the COVID-19 pandemic may require significant changes in course delivery and content on potentially short notice.

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

Office Hours

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
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<tbody>
<tr>
<td>Monday</td>
<td>9:00 - 10:00 am; 1:00 - 2:00 pm</td>
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<tr>
<td>Tuesday</td>
<td>1:00 - 2:00 pm</td>
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<td>Wednesday</td>
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<td>Thursday</td>
<td>1:00 - 2:00 pm</td>
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<tr>
<td>Friday</td>
<td>9:00 - 10:00 am</td>
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I will be available for office hours by appointment only. You can either meet with me in person or virtually.
1. To meet with me in person, come to my office located at MCS 220G.
2. To meet with me virtually, use Blackboard Collaborate.

If you need to schedule an appointment please follow the instructions below.

Schedule an Appointment
1. Login to Navigate with your Ramport username and password
2. Click on the blue button that reads Get Assistance
3. Choose the type of Appointment: Advising
4. Select a service category from the drop-down menu: Academic Advising
5. Pick a service: Advising
6. Choose the location: Mathematics Department, Web, Phone, Email
7. Choose me for your advisor: Dionne Bailey
8. Select a day/time by clicking on morning or afternoon for a given day. It will show specific times open for appointments.

Class Meetings
The lecture videos and notes are available in Blackboard. We will meet virtually in Collaborate for the exam reviews (review days are listed in the schedule below).
Tests
We will have four in-class written tests and an in-class cumulative final exam. The exam dates are listed in the course schedule below. Contact me immediately if you are unable to take an exam at the scheduled date.

Daily Work
Daily work will consist of homework problems from the textbook. You will complete the homework assignment on paper and include your work. Then you will take a photo/scan of all of your work and use an app to create a pdf file. Then you will submit this pdf file via Blackboard. Homework is due at 11:59 PM on Tuesday and Friday. The homework due dates are listed in the course schedule below. Contact me immediately if you fail to submit a homework assignment by the due date.

Grade Calculation
Your grade on daily work will count for 15%, your test average will count for 60%, and the cumulative final examination will count for 25%.

The following grading scale is in use for this course:
A = 90.00-100
B = 80.00-89
C = 70.00-79
D = 60.00-69
F = 0-59

Prerequisite
Mathematics 2312 or 2412, 2413.

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**


**Table of Contents**

1. **Prerequisites.** Real Numbers; Cartesian Coordinate System; Solving Equations Graphically, Numerically, and Algebraically; Complex Numbers.
2. **Functions and Graphs.** Inverse Functions, Modeling with Functions.
3. **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.
4. **Exponential, Logistic, and Logarithmic Functions.** Mathematics of Finance.
5. **Trigonometric Functions.** Graphs of Sine and Cosine: Sinusoids; Solving Problems with Trigonometry.
7. **Applications of Trigonometry.** Vectors in the Plane; De Moivre’s Theorem and nth Roots.
8. **Systems of Equations and Matrices.** Solving Systems of Two Equations; Systems of Inequalities in Two Variables; Linear Programming.
9. **Discrete Mathematics.** Basic Combinatorics; The Binomial Theorem; Probability; Sequences; Series, Statistics and Data (Graphical); Statistics and Data (Algebraic).

**Course Schedule**

The subject matter schedule listed below is tentative, and subject to change and adaptation. View the updated course schedule in Blackboard.

**Monday, June 7**
Section P.1 Real Numbers *(due Friday, June 11 at 11:59 PM)*

**Tuesday, June 8**
Section P.1 Real Numbers *(due Friday, June 11 at 11:59 PM)*
**Wednesday, June 9**
Section P.2 Cartesian Coordinate System *(due Tuesday, June 15 at 11:59 PM)*

**Thursday, June 10**
Section P.2 Cartesian Coordinate System *(due Tuesday, June 15 at 11:59 PM)*

**Friday, June 11**
Section P.5 Solving Equations Graphically, Numerically, and Algebraically *(due Tuesday, June 15 at 11:59 PM)*

**Monday, June 14**
Section P.6 Complex Numbers *(due Friday, June 18 at 11:59 PM)*

**Tuesday, June 15**
Section 1.7 Modeling with Functions *(due Friday, June 18 at 11:59 PM)*

**Wednesday, June 16**
*Virtual Exam Review using Collaborate*

**Thursday, June 17**
Section 1.5 Inverse Functions *(due Tuesday, June 22 at 11:59 PM)*

**Friday, June 18**
Exam 1 is an in-class written test covering the following content.
- Section P.1 Real Numbers
- Section P.2 Cartesian Coordinate System
- Section P.5 Solving Equations Graphically, Numerically, and Algebraically
- Section P.6 Complex Numbers
- Section 1.7 Modeling with Functions

**Monday, June 21**
Section 2.1 Linear and Quadratic Functions and Modeling *(due Friday, June 25 at 11:59 PM)*

**Tuesday, June 22**
Section 2.1 Linear and Quadratic Functions and Modeling *(due Friday, June 25 at 11:59 PM)*

**Wednesday, June 23**
Section 2.2 Power Functions with Modeling *(due Tuesday, June 29 at 11:59 PM)*

**Thursday, June 24**
Section 2.4 Real Zeros of Polynomial Functions *(due Tuesday, June 29 at 11:59 PM)*
Friday, June 25
Section 2.4 Real Zeros of Polynomial Functions (due Tuesday, June 29 at 11:59 PM)

Monday, June 28
Section 2.5 Complex Zeros and the Fundamental Theorem of Algebra (due Friday, July 2 at 11:59 PM)

Tuesday, June 29
Section 2.5 Complex Zeros and the Fundamental Theorem of Algebra (due Friday, July 2 at 11:59 PM)

Wednesday, June 30
Section 4.4 Graphs of Sine and Cosine Sinusoids (due Tuesday, July 6 at 11:59 PM)

Thursday, July 1
Section 4.4 Graphs of Sine and Cosine Sinusoids (due Tuesday, July 6 at 11:59 PM)

Friday, July 2
Virtual Exam Review using Collaborate

Monday, July 5
Section 4.8 Solving Problems with Trigonometry (due Friday, July 9 at 11:59 PM)

Tuesday, July 6
Exam 2 is an in-class written test covering the following content.
  • Section 1.5 Inverse Functions
  • Section 2.1 Linear and Quadratic Functions and Modeling
  • Section 2.2 Power Functions with Modeling
  • Section 2.4 Real Zeros of Polynomial Functions
  • Section 2.5 Complex Zeros and the Fundamental Theorem of Algebra

Wednesday, July 7
Section 5.5 The Law of Sines (due Tuesday, July 13 at 11:59 PM)

Thursday, July 8
Section 5.5 The Law of Sines (due Tuesday, July 13 at 11:59 PM)

Friday, July 9
Section 5.6 The Law of Cosines (due Friday, July 16 at 11:59 PM)
Monday, July 12
Section 5.6 The Law of Cosines (due Friday, July 16 at 11:59 PM)

Tuesday, July 13
Section 6.1 Vectors in the Plane (due Tuesday, July 20 at 11:59 PM)

Wednesday, July 14
Section 6.1 Vectors in the Plane (due Tuesday, July 20 at 11:59 PM)

Thursday, July 15
Section 6.6 De Moivre’s Theorem and nth Roots (due Tuesday, July 20 at 11:59 PM)

Friday, July 16
Section 6.6 De Moivre’s Theorem and nth Roots (due Tuesday, July 20 at 11:59 PM)

Monday, July 19
Section 7.1 System of Two Equations (due Tuesday, July 27 at 11:59 PM)

Tuesday, July 20
Virtual Exam Review using Collaborate

Wednesday, July 21
Section 7.5 Systems of Inequalities (due Tuesday, July 27 at 11:59 PM)

Thursday, July 22
Exam 3 is an in-class written test covering the following content.
- Section 4.4 Graphs of Sine and Cosine Sinusoids
- Section 4.8 Solving Problems with Trigonometry
- Section 5.5 The Law of Sines
- Section 5.6 The Law of Cosines
- Section 6.1 Vectors in the Plane
- Section 6.6 De Moivre’s Theorem and nth Roots

Friday, July 23
Section 9.1 Basic Combinatorics (due Friday, July 30 at 11:59 PM)

Monday, July 26
Section 9.1 Basic Combinatorics (due Friday, July 30 at 11:59 PM)

Tuesday, July 27
Section 9.2 The Binomial Theorem (due Tuesday, August 3 at 11:59 PM)
Wednesday, July 28
Section 9.2 The Binomial Theorem (due Tuesday, August 3 at 11:59 PM)

Thursday, July 29
Section 9.3 Probability (due Tuesday, August 3 at 11:59 PM)

Friday, July 30
Section 9.3 Probability (due Tuesday, August 3 at 11:59 PM)

Monday, August 2
Section 9.4 Sequences (due Friday, August 6 at 11:59 PM)

Tuesday, August 3
Section 9.4 Sequences (due Friday, August 6 at 11:59 PM)

Wednesday, August 4
Section 9.5 Series (due Tuesday, August 10 at 11:59 PM)

Thursday, August 5
Section 9.5 Series (due Tuesday, August 10 at 11:59 PM)

Friday, August 6
Virtual Exam Review using Collaborate

Monday, August 9
No Assignments

Tuesday, August 10
Exam 4 is an in-class written test covering the following content.
  - Section 7.1 System of Two Equations
  - Section 7.5 Systems of Inequalities
  - Section 9.1 Basic Combinatorics
  - Section 9.2 The Binomial Theorem
  - Section 9.3 Probability
  - Section 9.4 Sequences
  - Section 9.5 Series

Wednesday, August 11
Virtual Exam Review using Collaborate
Thursday, August 12
No Assignments

Friday, August 13
The Final Exam is an in-class written test, and it is cumulative.

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
- Angelo State University Catalog

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 university’s 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. Resources to help you understand this policy better are available at the ASU Writing Center.

Accommodations for Students with Disabilities
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.

Student Disability Services is located in the Office of Student Affairs, and is the designated campus department charged with the responsibility of reviewing and authorizing requests for reasonable accommodations based on a disability. It is the student’s responsibility to initiate such a request by contacting an employee of the Office of Student Affairs, in the Houston Harte
University Center, Room 112, or contacting the department via email at ADA@angelo.edu. For more information about the application process and requirements, visit the Student Disability Services website. The employee charged with the responsibility of reviewing and authorizing accommodation requests is:

Dallas Swafford  
Director of Student Disability Services  
Office of Student Affairs  
325-942-2047  
dallas.swafford@angelo.edu  
Houston Harte University Center, Room 112

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 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. See ASU Operating Policy 10.19 Student Absence for Observance of Religious Holy Day for more information.

Title IX at Angelo State University
The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, and other types of Sexual Misconduct. Sexual Misconduct is a broad term encompassing all forms of gender-based harassment or discrimination including: sexual assault, sex-based discrimination, sexual exploitation, sexual harassment, public indecency, interpersonal violence (domestic violence and/or dating violence), and stalking. As a faculty member, I am a Responsible Employee meaning that I am obligated by law and ASU policy to report any allegations I am notified of to the Office of Title IX Compliance.

Students are encouraged to report any incidents of sexual misconduct directly to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator at:

Michelle Miller, J.D.  
Special Assistant to the President and Title IX Coordinator  
Mayer Administration Building, Room 210  
325-486-6357  
michelle.boone@angelo.edu

You may also file a report online 24/7.
If you are wishing to speak to someone about an incident in confidence you may contact the University Health Clinic and Counseling Center at 325-942-2173 or the ASU Crisis Helpline at 325-486-6345.

For more information about Title IX in general you may visit https://www.angelo.edu/title-ix

i https://us.bbcollab.com/guest/d69aa9f9ebf944939c56b7dba1db4160
ii https://angelo.campus.eab.com/
iii https://angelo.blackboard.com/
iv https://www.angelo.edu/current-students/student-handbook/
v https://www.angelo.edu/academics/catalog/
vii https://www.angelo.edu/current-students/writing-center/academic_honesty.php
viii https://www.angelo.edu/current-students/disability-services/
ix https://www.angelo.edu/content/files/14197-op-1011-grading-procedures
x http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of
xi http://www.angelo.edu/incident-form
xii https://www.angelo.edu/title-ix