Math 1332.T80 (TR 8AM)  
Introduction to Contemporary Mathematics  
Fall 2020 Syllabus

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:
Instructor: Mrs. Paula Koca
Office: MCS 220L
Office Phone: (325) 486-5437
Email: paula.koca@angelo.edu

Office Hours:
Monday: 10:00am – 1:00pm; 2:00 – 2:30 pm  
Tuesday: 11 am – 12:30 pm  
Wednesday: 10:00am – 1:00pm  
Thursday: 11 am – 12:30 pm  
Friday: 12:30 – 1:00pm or By Appointment

Note: When contacting me via email or phone, allow 24 hours for a response.

Required Use of Masks/Facial Coverings by Students in Class At Angelo State University
As a member of the Texas Tech University System, Angelo State University has adopted the mandatory Facial Covering Policy to ensure a safe and healthy classroom experience. Current research on the COVID-19 virus suggests there is a significant reduction in the potential for transmission of the virus from person to person by wearing a mask/facial covering that covers the nose and mouth areas. Therefore, in compliance with the university policy students in this class are required to wear a mask/facial covering before, during, and after class. Faculty members may also ask you to display your daily screening badge as a prerequisite to enter the classroom. You are also asked to maintain safe distancing practices to the best of your ability. For the safety of everyone, any student not appropriately wearing a mask/facial covering will be asked to leave the classroom immediately. The student will be responsible to make up any missed class content or work. Continued non-compliance with the Texas Tech University System Policy may result in disciplinary action through the Office of Student Conduct.

Statement for Asynchronous Remote Sessions
To maintain academic quality while accommodating social distancing needs this semester, this course will use a split delivery model that combines face-to-face teaching with remote instruction.  
The goal is to provide face-to-face instruction to students who want to return to campus, while also allowing students who may need to learn remotely to participate via virtual class sessions.

How Does It Work?
Your class will be divided and you will be placed into a smaller group of students to maintain physical distancing requirements in our assigned classroom space.
Your assigned group will receive a schedule of in-person class meetings. This schedule is not flexible. For instance, if you are supposed to attend class on a Monday, you cannot elect to go on Wednesday with another class group instead.

When you are not in the physical class, you will be responsible for completing assigned coursework in Blackboard. This work can be completed any time before the posted deadline.

Please refer to this Health and Safety web page for updated information about campus guidelines as they relate to the COVID-19 pandemic.

What is a T - Section?

• A T - Section is college credit bearing course paired with supplemental instruction for those students who are not TSI complete.
• T - Sections allow students to take their college level mathematics class (with supplemental instruction) immediately rather than having to first spend a semester or two taking developmental mathematics courses prior to being allowed to take college level mathematics. This course design is ideal for students who have math deficiencies but are willing to put forth the time and effort needed to complete the course satisfactorily.
• The course materials and lessons for the college level course and supplemental instruction will complement each other. In a way, each part of the T – Section reinforces and helps the other part.
• Learning communities are a great way to begin college life. We will heavily stress learning communities. You will work some problems in groups with each person in the group contributing their fair share to the effort. You will be asked at times to be peer tutors for others that are struggling. The nature of the material is such that (each topic is very different from other topics) each of you will find topics in which you excel and other topics in which you struggle. This is where peer tutoring will become very helpful!

Major Course Requirements

Use of Blackboard:

• Handouts will be placed on Blackboard for you to print as necessary.

Use of Calculators:

• All students will need a calculator. We will discuss the type of calculator needed on the first day of class.

Attendance:

• Attendance will be taken daily. However, due to ASU’s social distancing policy, the class will be split into two groups: Group A and Group B. Group A will attend in-class on Tuesday/Thursday from 8-9:15am. Group B will attend in-class on Tuesday/Thursday from 9:30am – 10:45am. You will be notified via email as to which group you will be in before the first day of class. Excessive absences are reported to the administration and play a definite role in suspension considerations.

Daily Work:

• Daily work will consist of traditional homework problems assigned from the text book or worksheets supplied to students through blackboard.
• All paper homework will be scanned and uploaded to Gradescope, an online platform. More information regarding Gradescope is available in Blackboard. Please use standard size white notebook
paper (line or unlined) for homework. Box in your answers and show all your work in an organized readable format. A paper with no work to support answers will receive a grade a grade of 0.

- The three lowest homework grades will be dropped at the end of the semester.
- **No late homework will be accepted.** The 3 dropped grades are meant to replace homework missed due to illness or emergency. Save them for when you are ill. Once they are used, any missing homework for any reason will be a zero.

Exams:

- We will have four exams where the fourth exam will be given on final exam day. The fourth exam (final exam) will not be cumulative unless you have missed an exam. The exact dates and coverage of these tests will be announced in class.
- There will be no make-up exams. Therefore, if you miss an exam, you will be required to take a comprehensive final exam which will count as the missed exam grade and the 4th exam. If you are ill on an exam day, please get a note from the clinic and call me immediately.
- Group A – Regular exams will be administered from 8-9:15am.
- Group B – Regular exams will be administered from 9:30-10:45am.

Review days for Exams:

- Group A – Review days for exams will attend class from 8:00-9:15am.
- Group B – Review days for exams will attend class from 9:30-10:45am.

Final Exam Dates:

- Group A – Final Exam will be on Saturday, November 21, 2020 from 8-10am.
- Group B – Final Exam will be on Tuesday, November 24, 2020 from 8-10am.

Grading:

- Grades will be determined as follows:
  - Homework & Quizzes- 20%
  - Exams - 20% each
  - Final Exam- 20%

Final Grades:

- Final grades will be determined using the following scale
  - A: 90% or above
  - B: 80% - 89%
  - C: 70% - 79%
  - D: 60% - 69%
  - F: Below 60%

Math Lab:

- The Mathematics Department offers a Math Lab. This lab is an open lab meaning that you are not required to attend but can come and go as you please and as you need help. It is free tutoring so please take advantage of it!
- Math Lab is located on the third floor of the library, Room C302.
- Math Lab Hours can be found at this location on the Angelo State University website: [http://www.angelo.edu/dept/mathematics/lab_hours.php](http://www.angelo.edu/dept/mathematics/lab_hours.php)

Class Rules:

- Arrive on time and remain entire class period. We will take a break of 5-7 minutes between the lecture and the supplemental portion of the class.
• No iPods or MP3 players – you cannot listen to a lecture while listening to music.
• Cell phones are to be turned off during class and must be placed in backpacks below desk during exams.
• No talking while I am talking – this is disruptive to your fellow students.
• No food or drinks in classrooms unless absolutely necessary (due to illness). If you do need a drink, please be sure it has a cover to prevent spills.
• During supplemental section, all students are to be focused on working problems in their groups. Discussions not math related, could result in a grade of zero on that day’s assignment.
• All students are to be respectful and courteous to each other.

Technology Requirements:

For this class, you must have access to a computer, printer, webcam, and scanner.

Textbook: *Excursions in Modern Mathematics 9th ed.* by Peter Tannenbaum, Prentice Hall

University Policies:

**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](#)

In the event that the university is closed for a scheduled class time, whatever was scheduled for that day and/or whatever was due that day will be scheduled and/or due on the next scheduled class time.

**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 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 Boone, J.D.

Director of Title IX Compliance/Title IX Coordinator

Mayer Administration Building, Room 210

325-942-2022

michelle.boone@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form.

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.

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.

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.
Student Learning Outcomes

1. Students will demonstrate factual knowledge including the mathematical notation and terminology used in this course. Students will read, interpret, and use the vocabulary, symbolism, and basic definitions used in a selection from the following topics: basic algebraic techniques, voting theory, apportionment, the mathematics of money, probability, statistics, graph theory, and geometry.

2. Students will describe generalizations of mathematics to real-world situations. Students will be able to describe, for example, the role played by mathematics in the theory of voting. The students will be able to describe connections between mathematical concepts and natural and social phenomena.

3. Students will apply course material along with techniques and procedures covered in this course to solve problems and improve decision making. Students will apply such topics related to statistics and probability to improve decision making through a broader understanding of mathematics. They will learn to analyze problems using mathematical ideas and symbolism and learn to obtain the appropriate resources required to better deal with such problems.

4. Students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields. Students will develop new approaches and algorithms for solving problems related to networking, scheduling and paths. Students will develop basic algebraic skills necessary for the support of their academic careers.

Subject Matter:

<table>
<thead>
<tr>
<th>Week</th>
<th>Materials Covered</th>
<th>Algebra Concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Syllabus, Basic Elements of an Election, Preference Schedules, Voting Methods</td>
<td>Extra Practice Worksheets for Integer +,−,×,÷</td>
</tr>
<tr>
<td>2</td>
<td>Voting Methods, Weighted Voting, Banzoff Power</td>
<td>Solving Linear Equations</td>
</tr>
<tr>
<td>3</td>
<td>Fair Division, Voting Review, Sealed Bids</td>
<td>Absolute Value</td>
</tr>
<tr>
<td>4</td>
<td>Review, Exam 1</td>
<td></td>
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<tr>
<td>5</td>
<td>Apportionment, Hamilton’s Method, Street-Routing Problems, Intro to Graph Theory</td>
<td>Order of Operations</td>
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<tr>
<td>6</td>
<td>Euler’s Theorem, Eulerizing Graphs, Traveling Salesman Problem</td>
<td>Extra Practice Worksheet for Fractions</td>
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<tr>
<td>7</td>
<td>Hamilton Paths and Circuits, Brute Force Algorithm, Nearest Neighbor Algorithm</td>
<td>Exponent Rules</td>
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<tr>
<td>8</td>
<td>Review, Exam 2, Networks</td>
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<tr>
<td>9</td>
<td>Spanning Trees, Kruskal’s Algorithm, Math of Finance</td>
<td>Polynomial Addition &amp; Subtraction</td>
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<tr>
<td>10</td>
<td>Math of Finance, Rigid Motion</td>
<td>Distributive Law &amp; Polynomial Multiplication</td>
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<tr>
<td>11</td>
<td>Review, Exam 3</td>
<td>Factoring by GCF</td>
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<tr>
<td>12</td>
<td>Frequency Tables, Graphs and Charts</td>
<td>Factoring Basic Trinomials</td>
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<tr>
<td>13</td>
<td>Statistics, Future Value Annuities</td>
<td>Simplifying Radicals</td>
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<tr>
<td>14</td>
<td>Probability, Review</td>
<td></td>
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<tr>
<td></td>
<td>Final Exam</td>
<td></td>
</tr>
</tbody>
</table>

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2. **The students will be able to describe generalizations of mathematics to real-world situations.** Students will be able to describe, for example, the role played by mathematics in the theory of voting. The students will be able to describe connections between mathematical concepts and natural and societal phenomena.

3. **The students will apply the course material along with techniques and procedures covered in this course to solve various problems and improve decision making.** The students will apply such topics related to statistics and probability to improve decision making through a broader understanding of mathematics. They will learn to analyze problems using mathematical ideas and symbolism and learn to obtain the appropriate resources required to better deal with such problems.

4. **The students will develop specific skills, competencies, and thought processes sufficient to support further study or work in this field or related fields.** Students will develop new approaches and algorithms for solving problems related to networking, scheduling and paths. Students will develop basic algebraic skills necessary for the support of their academic careers.

**Course Content**

1. **Mathematics of Voting:** Preference Ballots, Plurality, Borda, Runoff Voting, Pairwise Comparison, Rankings
2. **Weighted Voting:** The Banzhaf Power Index, The Shapley-Shubik Power Index
4. **Apportionment:** Various methods including Hamilton’s, Jefferson’s, Adam’s, and Webster’s; The Alabama Paradox
5. **Euler Paths and Circuits:** Euler Circuit Problems, Graphs, Euler’s Theorems, Fleury’s Algorithm, Eularizing Graphs
6. **The Traveling Salesman Problem:** Hamilton Paths and Circuits, Complete Graphs, Greedy and Nearest Neighbor Algorithms
7. **Networks:** Trees, Spanning Trees, Kruskal’s Algorithm, Shortest Networks for Three or more points
8. **Scheduling:** Directed Graphs, Priority Lists, The Decreasing Time Algorithm, Critical Paths, Independent Tasks
9. **Fibonacci Numbers and the Golden Ratio:** Fibonacci Numbers, The Golden Ratio, Gnomons, Spiral Growth
10. **Math of Finance:** Percentages, Simple Interest, Compound Interest, Annuities
11. **Mathematics of Symmetry:** Rigid Motions, Reflections, Rotations Translations, Glide Reflections, Patterns
12. **Fractals**: The Koch Snowflake, The Sierpinski Gasket, Chaos, The Mandelbrot Set  
13. **Collecting Data**: Sampling, Random Sampling, The Capture-Recapture Method, Clinical Studies  
14. **Descriptive Statistics**: Graphical Methods, Variables, Data Summaries, Spread  
15. **Probability**: Random Experiments, Sample Spaces, Permutations, Combinations, Equiprobable Spaces, Odds  
16. **Normal Distributions**: Approximately Normal Distributions, Normal Curves, Distributions of Random Events, Statistical Inference. **Additional Algebraic Techniques:**  
   - Order of Operations- numeric applications for PEMDAS with no variables.  
   - The Distributive Law  
   - Absolute Value- evaluating the absolute value of numbers as a distance from 0  
   - Exponent Rules- basic integer exponents (both positive and negative), along with the product rule, quotient rule, and power rule  
   - Simplifying Radicals- simplifying square roots and cube roots with simple variables under the radicals; will include both perfect squares/cubes and others that have to be factored out  
   - Polynomial Addition & Subtraction  
   - Polynomial Multiplication- both distributive property and FOIL are introduced  
   - Factoring by GCF- factoring polynomials strictly by greatest common factor  
   - Factoring Basic Trinomials- factoring trinomials with a leading coefficient of 1, or a GCF that lends a leading coefficient of 1.  
   - Solving Linear Equations- determine if a number is a solution to an equation; then solving basic linear equations; no rational equations are covered.

**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.

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3. [http://www.angelo.edu/catalogs/](http://www.angelo.edu/catalogs/)  
4. [http://www.angelo.edu/incident-form](http://www.angelo.edu/incident-form)  
5. [http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of](http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of)  
6. [http://www.angelo.edu/content/files/14197-op-1011-grading-procedures](http://www.angelo.edu/content/files/14197-op-1011-grading-procedures)  