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: 9 am – 11 am; 2 pm – 3 pm
Tuesday: 11 am – 12:30 pm; 2 pm – 2:30 pm
Wednesday: 9 am – 11 am
Thursday: 11 am – 12:30 pm; 2 pm – 2:30 pm
Friday: 12 pm – 1 pm

Note: When contacting me via email or phone, allow 24 hours for a response. I do not make it a habit to check email from home.

Major Course Requirements
Use of Blackboard
• Handouts will be placed on Blackboard for you to print as necessary.
• They will appear under the tabs labeled Course Information (syllabus, office hours, etc.) and Handouts (handouts needed for class and homework). 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 and is mandatory for the entire class period.

Daily Work:
• Daily work will consist of traditional homework problems assigned from the text book or worksheets supplied to student through Blackboard.
• Fold the assignment lengthwise with your name, course, and row on the outside near the top of the paper.
• I will drop 3 homework/quiz grades at the end of the semester. If you are absent for any reason, the homework can be delivered by a friend to my office or faxed to me prior to class or it will become one of the three dropped grades.
• 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. • To receive credit for homework assignments, they must be placed on my desk prior to the beginning of lecture. 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.

Grading:
• Exams will be given during the Math 1332 portion of the class.

<table>
<thead>
<tr>
<th>Daily Average (homework, worksheets, and quizzes)</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each of the three regular exams</td>
<td>20%</td>
</tr>
<tr>
<td>Final Exam (4th exam)</td>
<td>20%</td>
</tr>
</tbody>
</table>

Final Grades will be assigned as follows:

<table>
<thead>
<tr>
<th>Average 90 or above</th>
<th>Average 80-89</th>
<th>Average 70-79</th>
<th>Average 60-69</th>
<th>Average under 60</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>B</td>
<td>C</td>
<td>D</td>
<td>F</td>
</tr>
</tbody>
</table>

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)
• You will also find these hours posted on my office door along with my office hours (also posted throughout the MSC building).

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.
• Cell phones 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.
• All students are to be respectful and courteous to each other. You are adults and I expect you to act as such.

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

Subject Matter:

<table>
<thead>
<tr>
<th>Week</th>
<th>Materials Covered</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Syllabus, Basic Elements of an Election, Preference Schedules, Voting Methods</td>
</tr>
<tr>
<td>2</td>
<td>Voting Methods, Weighted Voting, Banzhoff Power</td>
</tr>
<tr>
<td>3</td>
<td>Fair Division, Voting Review, Sealed Bids</td>
</tr>
<tr>
<td>4</td>
<td>Review, Exam 1, Apportionment</td>
</tr>
<tr>
<td>5</td>
<td>Hamilton's Method, Street-Routing Problems, Introduction to Graph Theory</td>
</tr>
<tr>
<td>6</td>
<td>Euler’s Theorem, Eulerizing Graphs, Traveling Salesman Problem</td>
</tr>
<tr>
<td>7</td>
<td>Hamilton Paths and Circuits, Brute Force Algorithm, Nearest Neighbor Algorithm</td>
</tr>
<tr>
<td>8</td>
<td>Review, Exam 2, Networks</td>
</tr>
</tbody>
</table>
Student Learning Outcomes
1. **The 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. **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, Eulerizing 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

- 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.

University Policies:

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

Angelo State University is committed to providing and strengthening an educational, working, and living environment where students, faculty, staff, and visitors are free from sex discrimination of any kind. Sex discrimination, sexual misconduct, public indecency, interpersonal violence, sexual assault, sexual exploitation, sexual harassment, and stalking are not tolerated at ASU. As a faculty member, I am a Responsible Employee meaning that I will report any allegations I am notified of to the Office of Title IX Compliance in order to connect students with resources and options in addressing the allegations reported. You are encouraged to report any incidents to ASU’s Office of Title IX Compliance and the Director of Title IX Compliance/Title IX Coordinator. You may do so by contacting:

Michelle Boone, J.D.
Director of Title IX Compliance/Title IX Coordinator
Mayer Administration Building, Room 200
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.
The Office of Title IX Compliance also provides accommodations related to pregnancy (such as communicating with your professors regarding medically necessary absences, modifications required because of pregnancy, etc.). If you are pregnant and need assistance or accommodations, please contact the Office of Title IX Compliance utilizing the information above.

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

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. (OP 10.19 Student Absence for Observance of Religious Holy Day)

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 OP 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 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.

i http://www.angelo.edu/opmanual/
ii http://www.angelo.edu/content/files/14197-op-1011-grading-procedures