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
E-mail: paula.koca@angelo.edu

Office Hours:
Monday: 9 am – 11 am; 2 pm – 3 pm
Tuesday / Thursday: 1:00 pm – 3:00 pm
Wednesday: 9 am – 11 am
Friday: 10 am – 11 am and by appointment

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.

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

Math Lab
• There is a Math Learning Lab which offers free tutoring. This is a great place to do homework or go if you have questions on an assignment and you are unable to come to my office. The lab is located on the third floor of the library in room C302. Online tutoring is available through the SMART Online tab located in Blackboard. You can schedule a live conference with a tutor, post a question on the discussion board, or click on links to other math resources.

M – TH: 9:00 am – 8:00 pm
F: 9:00 am – 12:00pm
Sunday: 4:00pm – 8:00pm (starting 1/12/18)

Grading Scale

<table>
<thead>
<tr>
<th>Daily Average (homework, worksheets, and quizzes)</th>
<th>20%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each of 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>
Homework

- Daily work will consist of traditional homework problems assigned from the textbook or worksheets supplied to students through blackboard.
- Fold the assignment lengthwise with your name, course, and row on the outside near the top of the paper.
- I will drop 4 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 four dropped grades.
- No late homework will be accepted. The 4 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.

Exam Reviews

- There will be three regular exam reviews and one final (fourth) exam review. These exam reviews are designed to prepare you for in-class exams.

Exams

- We will have three in-class exams and a final (fourth) exam. In general, calculators will be allowed on exams. All exams, including the final, will be pencil-and-paper exams. There will be no make-up exams. If you leave the room during an exam, I may take up your exam and grade as is.

Final Exam

- We will have a Final Exam. Dates and times are as follows:
  
  **Math 1332.010**: Wednesday, May 9, 2018 from 10:30am – 12:30pm

Drop Date

- **Monday, April 2, 2018**, is the last day to drop a course or to withdraw from the university.

Class Rules

- Arrive on time and remain entire class period!
- 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.
- All students are to be respectful and courteous to each other. You are adults and I expect you to act as such.

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**

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:
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 to 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.
## Tentative Class Schedule

<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, Banzoff Power</td>
</tr>
<tr>
<td>3</td>
<td>Fair Division, Voting Review, Sealed Bids</td>
</tr>
<tr>
<td>4</td>
<td>Sealed Bids, Review, Exam 1</td>
</tr>
<tr>
<td>5</td>
<td>Apportionment, Hamilton’s Method, Jefferson’s Method, Street-Routing Problems</td>
</tr>
<tr>
<td>6</td>
<td>Introduction to Graph Theory, Euler’s Theorem, Eulerizing Graphs</td>
</tr>
<tr>
<td>7</td>
<td>Traveling Salesman Problem, Hamilton Paths and Circuits, Brute Force Algorithm</td>
</tr>
<tr>
<td>8</td>
<td>Nearest Neighbor Algorithm, Review, Exam 2</td>
</tr>
<tr>
<td>9</td>
<td>Networks, Spanning Trees, Kruskal’s Algorithm</td>
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<tr>
<td>10</td>
<td>Math of Finance</td>
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<tr>
<td>11</td>
<td>Math of Finance</td>
</tr>
<tr>
<td>12</td>
<td>Math of Finance, Review, Exam 3</td>
</tr>
<tr>
<td>13</td>
<td>Rigid Motions, Frequency Tables, Graphs and Charts</td>
</tr>
<tr>
<td>14</td>
<td>Statistics, Future Value Annuities</td>
</tr>
<tr>
<td>15</td>
<td>Probability, Review</td>
</tr>
<tr>
<td>16</td>
<td>FINAL EXAM</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: 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.

## 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
16. **Normal Distributions**: Approximately Normal Distributions, Normal Curves, Distributions of Random Events, Statistical Inference.

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