Instructor: Juan Montemayor

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Office: MCS 219 F

Office Hours: MWF 9:00 AM - 10AM and 2:00 PM – 3:00 PM also TTh 9:00 - 9:30 AM and MTWT: 6:30-7:45 PM by appointment in MCS 215

Course Information

Course Description – see course content below – next page

Topics vary from basic arithmetic rules and properties, to algebraic concepts such as factoring, and various topics of interest. We will look at method of elections, sharing, power of individuals or groups. We will also look at fair division of goods, some ideas of graphs including Euler graphs and Hamiltonian graphs, and some statistics. Other topics will be chosen along the way. For a complete description see course content.

Prerequisite Skills

You should have basic arithmetic skills and knowledge that allow you to perform calculations with and without the use of a calculator. You should be able to follow written and oral/verbal instructions. Some basic use of computer technology. An ability and desire to learn and relearn mathematical topics of interest such as those listed in the course content.
Other Prerequisite Skills
Be able to access Internet websites, learn to use Blackboard, make use of ASU Library resources as needed, and have some proficiency with Microsoft Word and the ability, curiosity, and desire to learn more. Be able to follow directions and be able to find where the math lab is located – both in person and online. Locate your professors offices across campus. Understand the instructor’s definition of studying – not the day before an exam, but studying throughout the semester.

Although we do not make as much use of the calculator as you would like, make sure you are able to use non-graphing calculators.
You will have problems that must be done without the use of a calculator.

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

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.
We may also discuss within the topics above and also individually some of the algebraic ideas presented below. These topics are covered in a 1332 T-section course and they may also be discussed in a non T section 1332 course.

**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.

**Student Learning Outcomes**

Upon completion of this course

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 Delivery**

Statement for Synchronous 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. Online students are expected to be online at the same time as in-person class. Most of you will be in class most of the time. Let me know if you will be joining me online (virtual learners) at the same class time as the students that are attending the in-person class.

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? Class size may cause the class to be divided. Probably not math 1316 fall semester – but just in case, I am leaving this statement in the syllabus.

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 attend live remote sessions at the same time as our scheduled course. Most - if not all assignments will be completed at the same time as the in-person class. You will also be expected to complete coursework via Blackboard.¹

Please refer to this Health and Safety web page² for updated information about campus guidelines as they relate to the COVID-19 pandemic.

**Required Texts and Materials**

Textbook is not required – notes will suffice for classroom instructions and for homework assignments.

Textbook below serves as a guide it is suggested but not required

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

**Technology Requirements**

To successfully complete this course, students need to have a nonscientific calculator. You may not get to use it on quizzes or exams but you are allowed to make use of the calculator as a checkpoint on homework assignments. There will be sections of the course that will require the use of calculators. At no time will your calculator be a graphing calculator. Instructor’s approval of the type of calculator may be required.

Ask before a quiz or an exam. Be able to download documents from blackboard. If you are using a chrome type computer, make sure the printout is complete and accurate.

I normally not allow laptops or phones in the classroom. Due to our current and possible future situation, I am asking you to bring your laptops – phones are an option but they are not my preferred choice – laptops are the preferred choice. Use laptops to view notes, take quizzes, … You may have to submit documents back to me (quizzes and tests) and that will require use of your phone. There will be a learning curve so do not panic. You will learn faster than I. Let me know as soon as possible if you will be having trouble doing any of this.

To successfully complete this course, students need to have access to a computer with a camera option. If you do assignments online (other than homework) you will be asked to join in through Blackboard Collaborate with a camera on you. Students that are following online will need some device that allows them to view the lecture through blackboard collaborate.
A printer and/or a scanner will be useful. I am not requiring you to have a printer – but you will need to be able to scan documents. There are apps that can be used for scanning. For those of you that have an Ipad – lucky you. They seem to work better for downloading documents and writing on the screen. All submitted documents must be submitted as PDF documents. I may use Zoom in the event we have go online and the class size is larger than what Blackboard Collaborate allows. I am not using Top Hat but if you have other classes that use it and you have the knowledge to use it, then feel free to use it in this class.

**Communication**

In your emails to faculty, include course name and section number in your subject line. We do not keep the same working hours. Keep that in mind when you send an email at 2:00 AM. The instructor will try to respond to emails and/or telephone messages within 24 hours during working hours Monday through Friday. In the event you do not hear from me, please send me a second and even a third message. I will not be ignoring you but I may be swamped with information – information overload and your email may have gotten lost in the pile. Weekend messages may not be returned until Monday.

Written communication via email: All private communication will be done exclusively through your ASU email address. Your other emails will be of no use for course work. Check frequently for announcements and policy changes – like daily.

Virtual communication: Office hours and/or advising will be done with the assistance of the telephone and Blackboard Collaborate.

Remember that you are sharing blackboard space with the entire class. Keep it official – as much as possible. Work group is encouraged – feel free to do join in, work together. I may even have an option for working together on tests – still an option in progress. This statement is for math 1324 in case I forget to erase it when completing the syllabus for other classes.

**Grading**

**Evaluation and Grades**

A more extensive explanation will be given in class on the first day of class. Course grades will be determined as indicated in the table below. Remarks about grading process will also be posted on blackboard no later than the second day of class.
### Assessment

<table>
<thead>
<tr>
<th>Assessment</th>
<th>Percent of Total Grade</th>
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<tbody>
<tr>
<td>Homework and attendance</td>
<td>10 %</td>
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<tr>
<td>Quizzes</td>
<td>10 %</td>
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<tr>
<td>Tests/Exams</td>
<td>80 %</td>
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<td><strong>Total</strong></td>
<td><strong>100%</strong></td>
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### Grading System

Course grades will be dependent upon completing course requirements and meeting the student learning outcomes.

The following grading scale is in use for this course:

- A = 90.00-100 points
- B = 80.00-89.99 points
- C = 70.00-79.99 points
- D = 60.00-69.99 points
- F = 0-59.99 points (Grades are not rounded up)

### Assignment and Activity Descriptions

All assignments (Exams, quizzes, and homework) will be turned in as PDF documents. Scan the document (this does not mean to take a picture – a picture may be part of the process – you are scanning), save the document in PDF format on your computer – or however your phone stores it, submit through blackboard as a PDF document (no other way). No late work will be accepted. There is no reason to miss an assignment and I will drop enough homework assignments and quizzes to account for missing one or two of them. In the event that you have a good reason and the instructor accepts your reason for missing one single exam, the final exam may replace the grade of missed exam.

### 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.5

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.6 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 Procedures7 for more information.
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. With math assignments, it is possible that group work may generate similar work. Exams should be individual work. 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. This statement does not affect math work as much as work in other areas of study.

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

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 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 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.

For more information about Title IX in general you may visit www.angelo.edu/title-ix.11

**Required Use of Masks/Facial Coverings by Students**

As a member of the Texas Tech University System, Angelo State University has adopted the mandatory [Facial Covering Policy](#)12 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.

**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.

**Course Schedule to be completed as the course progresses**

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<tr>
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<th>Topic or Module</th>
<th>Activities</th>
<th>Homework</th>
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