Syllabus: Math 1332 - 010
Contemporary Mathematics
Summer II, 2018

Instructor Information
Dr. Andrew J. Siefker
Office: MCS 219B
Phone: 486 - 5440 (office)
Email: andrew.siefker@angelo.edu
Office Hours: M: 1:30 – 3:30 p.m.
T: 1:30 – 2:30 p.m.
W: 1:30 – 2:30 p.m.
Th: 1:30 – 2:30 p.m.
F: none

or by appointment

Major Course Requirements
Text: Excursions in Modern Mathematics 9th ed. by Peter Tannenbaum, Pearson.
Prereqs: Completion of Mathematics Texas Success Initiative (TSI) requirements.
Grading:
• Exams ........................................ 0%.
• Homework and Quizzes ........ 100%.
• Attendance ..................................... Grade drops 1 letter grade per absence after 2 absences.

Note: I reserve the right to adjust the grading scheme and grading scale for an individual or the class as warranted. Please note that ASU’s interpretation of federal law (Buckley amendment) prohibits me from relaying your grades via phone or email.

Math Lab: Located on 3rd Floor of Library in C302
MTWR: 12 pm – 4 pm
F: 10 am – 2 pm
Students can login to Upswing to receive online help.

Attendance: Attendance will be taken but does not count towards your final grade.

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. Also, the subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, contact the instructor.
Course Policies:

Homework and Quizzes:
Homework is regularly collected and quizzes may be administered. When collected, homework is due when the instructor requests it (usually at the beginning of class.) Late homework is not accepted for correction, and receives a grade of ZERO. When given, quizzes count as a homework score and NO MAKE-UP QUIZZES will be given. You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any problem.

Homework turned in for a grade must follow a specific template. (1) Write the problems in numerical order, in a single column, using only one side of a sheet of paper. (2) Staple multiple sheets of paper together in the upper, left-hand corner. Be certain the problems are in numerical order. (3) Fold your homework longwise so that it opens like a book. Write your name, the course (e.g. Math 1324) and course time (e.g. 9 am), and the homework section number.

Examinations:
You must show complete solutions (i.e. all steps and calculations) and write LEGIBLY to receive credit for any “essay” problem. Scrap paper will be provided upon request; you may not use your own. If you miss or will miss an exam, contact the instructor ASAP. NO MAKE-UP EXAMS will be administered, and the use of calculators is at the discretion of the professor.

Grades:
All grades become final one week after the grade is recorded. Therefore, any questions you may have regarding a grade must be resolved before this one week deadline.

Class Etiquette:
Please be courteous of others in the class including: not utilizing cell phones, silencing cell phones, not habitually arriving late, not leaving during lectures (unless you notify me beforehand), not engaging in non-math related conversations or activities, etc.

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.

Ms. Dallas A. Swafford, Director of Student Disability Services
325-942-2047
dallas.swafford@angelo.edu
Houston Harte University Center

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:

Michelle Nicole Boone, Director of Title IX Compliance
325-486-6357
michelle.boone@angelo.edu
Houston Harte University 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 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.

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 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 via Turnitin. Resources to help you understand this policy better are available at the ASU Writing Center.

Copyright Policy

Students officially enrolled in this course should make only one printed copy of the given articles and/or chapters. You are expressly prohibited from distributing or reproducing any portion of course readings in printed or electronic form without written permission from the copyright holders or publishers.

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
**Student Responsibilities:**

1. Students are responsible for the policies and procedures delineated in this syllabus. Failure to abide by these policies and procedures may result in failing the course.

2. If you miss class for any reason, *even for University-sponsored activities*, it is your responsibility to have your assignments submitted on time or ahead of time if necessary. You are also responsible for preparing for the next class. This includes obtaining assignments, announcements, and notes FROM A CLASSMATE.

3. The main keys to success in this course are as follows:
   a. Attending class regularly.
   b. Reading the book and working through the examples.
   c. Taking good notes.
   d. Completing all assignments in a timely manner.
   e. Not falling behind.
   f. Reviewing the material on a regular basis. Studying for this course at least 6 hours per week (more if needed) is what is recommended by learning researchers and is what I expect of you. AT LEAST SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.

**Some Things to Consider About College Mathematics Courses:**

1. **Responsibility** – Though guided by your instructors and advisors, **YOU** are responsible from now on for your own education. SEVENTY-FIVE PERCENT OF YOUR LEARNING IS SELF-STUDY.

2. **Peer Group** – Most of you are no longer well above the majority of your classmates. You are in a new environment with people whose abilities are much like your own.

3. **Level of Learning** – The primary goals of a university education are three-fold:
   1) to learn essential *thinking skills* so that when you encounter a new or unfamiliar situation you can analyze the problem and carry out the necessary steps to solve it. This is especially important in mathematics since many courses require a mathematical background and expect you to use the material you have studied. 2) to *learn how to learn* on your own, i.e. how to teach yourself through reading, study, discussion, and contemplation. 3) to *develop an appreciation* for topics not directly related to employment. Students who do poorly in college mathematics courses are typically those who fall behind in their work, overestimate their effort, or insist on high-schoolish modes of learning.

4. **Roles of Students and Instructors** – The instructor’s role is to guide the students’ learning process. It is not to cover all aspects of every topic for every student. Students are expected to read the textbook, to learn some material on their own, and to fill in any gaps in their mathematical background. It is not uncommon in college mathematics courses that MUCH OF YOUR LEARNING WILL TAKE PLACE OUTSIDE THE CLASSROOM. You should plan to devote at least two hours outside the classroom for every hour of classroom instruction. Teaching and learning in college is a cooperative effort shared by the instructor and the student.

5. **Exams** – Class work and homework are intended to guide you in your task of gaining command of the material covered in this course. This **DOES NOT MEAN** that the examples you see will be exactly (or essentially) the same as the questions asked on exams. You are expected to prepare yourself for tests and the final exam. If you UNDERSTAND THE MATERIAL to the point where you can apply it to pertinent situations, you will do well on exams. If you concentrate on memorization and ad-hoc methods for particular problems, you will probably struggle on exams. There will be no review sessions or elaborate practice sheets to prep you for a test or final exam.
Student Learning Outcomes

1. **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

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

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.
**Required Texts or Readings:**
There is no required textbook for this course.

**Subject Matter Schedule**
The subject matter schedule listed below is tentative, and subject to change and adaptation. For current, updated information about course topics, [contact the instructor](mailto:instructor@example.com).

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