Math 1332.010 Spring 2022
Intro. to Contemporary math

Instructor: Autumn Hoover

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Office Hours:
Monday, Wednesday: 9:00 – 10: 00, 11:00 – 12:00
Tuesday: 9:15 – 11:15;
Thursday: 9:15 – 11:15, 2:00 – 4:00
Friday: No scheduled hours, but I am usually here by 9:00 if you need me.
Feel free to come see during any of these times

Class meets every Monday, Wednesday and Friday, in MCS 110 at 10:00 – 10:50.

Course Information

Course Description

A survey of ideas in contemporary mathematics. Topics may include graphs and networks, theory of elections and apportionment, statistics, and mathematical models.

Recommended for students who wish to satisfy their core mathematics requirement but do not plan to take additional mathematics coursework.

Prerequisite

Satisfying the TSI mathematics requirement.

Student Learning Outcomes

Upon completion of this course, students will be able to:

- **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.

- **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.

- **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.

- **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
2. **Weighted Voting:** Weighted Voting**,** The Banzhaf Power Index,
3. **Apportionment and Sharing:** Fair-Division Games, Sealed Bids
4. **Apportionment:** Various methods including Hamilton's,
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, Brute Force, Nearest Neighbor Algorithms
7. **Networks:** Trees, Spanning Trees, Kruskal's Algorithm,
8. **Math of Finance:** Percentages, Simple Interest, Compound Interest, Annuities
9. **Mathematics of Symmetry:** Rigid Motions, Reflections, Rotations Translations,
10. **Descriptive Statistics:** Graphical Methods, Data Summaries, Spread
11. **Probability:** Probabilities

Course Delivery

This course will meet in person. If you are not able to attend class in person due to illness, quarantine, etc. you will either attend live remote sessions at the same time as

our scheduled course or watch a recording of the lecture. You will also be expected to complete coursework via Blackboard.[1]

Attendance

Attendance will be taken daily. You are expected to attend all scheduled class meetings, arrive on time and stay for the entire class. You will be marked absent if you are more than 10 minutes late. I will count 3 tardies as an absence. Perfect attendance will give you 2 points added to your final course grade, 1-3 absences will get you 1 point. **If you are not physically present in class, you can email me a copy of your filled in notes before the next class period to get credit for attendance.**

Textbook

We will not be using a textbook this semester. You will be printing notes and bringing those to class daily. There is a free online textbook that is available as an additional resource if you feel you need it. However, I do not know how closely it resembles the notes we will be using. The link is found in blackboard under the Optional Textbook info tab.

Technology Requirements

- You will need a calculator. If you do not already have one, I recommend the TI 30XIIS. It usually runs less than $15.
- You will also need a scanner (or a scanning app for your phone),
- a webcam and microphone. (Most laptops come equipped with both a webcam and microphone.) This will only be used if you need to meet with me virtually.
- You will need access to a printer. If you don't have your own, there are computer labs on campus for you to print your notes/worksheets.

Communication

I usually respond to email and/or telephone messages within 24 hours during working hours Monday through Friday. Weekend messages may not be returned until Monday.

Written communication via email: All private communication will be done exclusively through your ASU email address. **Check frequently for announcements and policy changes**. In your emails to faculty, include the course name and section number in your subject line.

Virtual communication: Office hours and/or advising may be done with the assistance of the telephone, Collaborate, Skype, etc.

Exams

Tests/Final Exam: There will be three regular exams during the semester and a non-cumulative final exam. If you leave the room during an exam, I may take your test and grade it AS IS! There will be no make-up exams. If you do miss an exam, get in touch with me immediately. You may be required to take a comprehensive final exam to replace the missing exam.
Tentative Test Dates:

- Test 1: Friday, February 11th
- Test 2: Friday, March 11th
- Test 3: Friday, April 15th *This is Good Friday, which as of 1-13-22 is not listed as a holiday. If this changes, I will adjust the test date.
- Test 4 (Final Exam): Monday, May 9th 10:30 – 12:30

Grading

Grading System

Course grades will be dependent upon completing course requirements and meeting the student learning outcomes. The following grading scale is used in this course:

A = 90.00-100 B = 80.00-89 C = 70.00-79 D = 60.00-69 F = 0-59

Evaluation and Grades

Course grades will be determined as indicated in the table below.

Assessment	Percent of Total Grade
Daily grades	20%
Tests 1 – 3 (20% each)	60%
Final Exam	20%
Total	100%

The last day to drop a class is Thursday, April 28.

Assignment and Activity Descriptions

Homework will be assigned over every section. Daily work will consist of worksheets available under the Homework Assignment tab in Bb. Homework is due at the BEGINNING of class. **I DO NOT ACCEPT LATE HOMEWORK.**

- **You will need to scan pictures of every page of your homework. Convert it to a pdf and upload it into blackboard under the appropriate date in the homework assignments tab. IT IS YOUR RESPONSIBILITY TO MAKE SURE THE UPLOAD IS SUCCESSFUL BEFORE IT IS DUE.**

- If you are going to miss class, you still need to upload the assignment into blackboard **before class starts** on the day the assignment is due. No late assignments will be accepted.
- If you need assistance with an assignment, see me for help **before** it is due.
- Homework assignments will be posted daily on blackboard, on the Homework assignment tab.
- I will drop 4 homework grades at the end of the semester to compensate for unavoidable circumstances.
- Box and/or highlight your answers.
- Write legibly. If your answer cannot be read, it is wrong. Show all necessary work.

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[2]
- Angelo State University Catalog[3]

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.[4]

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.[5] 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 Procedures[6] for more information.

Plagiarism

Plagiarism is a serious topic covered in ASU's Academic Integrity statement[7] 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. Resources to help you understand this policy better are available at the ASU Writing Center.[8]

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[9] for more information.

Title IX at Angelo State University

The University prohibits discrimination based on sex, which includes pregnancy, sexual orientation, gender identity, gender expression, 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 of sexual misconduct that 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 Miller, J.D.
Special Assistant to the President and Title IX Coordinator
Mayer Administration Building, Room 210
325-942-2022
michelle.miller@angelo.edu

You may also file a report online 24/7 at www.angelo.edu/incident-form[10].

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 the Title IX website.[11]

Information About COVID-19

Please refer to ASU's COVID-19 (Coronavirus) Updates[12] web page for current information about campus guidelines and safety standards as they relate to the COVID-19 pandemic.

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

Date	Topic or Module
1	Syllabus, Basic Elements of an Election
2	Basic Elements of an Election; Voting Methods
3	Voting Methods

4	Weighted Voting
5	Banzhaf
6	Fair Share
7	Sealed Bids
8	Apportionment
9	Test 1 Review
10	Review work-Practice Test
11	Test 1 (2/11/2022)
12	Hamilton's Method; Street-Routing Problems; Introduction to Graphs
13	Introduction to Graphs
14	Euler's Theorem;
15	Eulerizing Graphs; Traveling Salesman Problem
16	Hamilton Paths & Circuits; Brute Force Algorithm
17	Brute Force Algorithm; Nearest Neighbor Algorithm
18	Networks and Trees; Spanning Trees
19	Spanning Trees;
20	Kruskal's Algorithm
21	Test 2 Review;
22	Practice Test 2
23	Test 2 (3/11/2022)
24	Math of Finance Definitions; MOF Packet 1
25	Math of Finance Packet 1
26	Annuity Packet
27	Annuity Packet
28	Rigid Motions: Translations and Reflections
29	Rotations
30	Test 3 Review- Packet A
31	Test 3 Review- Packet B
32	Math of Finance Packet 2;
33	Frequency Tables
34	Practice Test 3
35	Test 3 (4/15/2022)
36	Graphs & Charts
37	Future Value of Annuities
38	Means, Medians and Percentiles
39	Range and Standard Deviation
40	Advanced Rigid Motions

41	Probability
42	Core Assessment, IDEA
43	Review for final exam
44	Practice Test 4
45	**Final Exam, Monday, May 11, 2021 at 10:30 – 12:30;**

[1] https://angelo.blackboard.com/
[2] https://www.angelo.edu/current-students/student-handbook/
[3] https://www.angelo.edu/academics/catalog/
[4] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[5] https://www.angelo.edu/current-students/disability-services/
[6] https://angelo.policystat.com/policy/token_access/65af01c7-4cf6-4fe3-8fc8-5203b1ecece9/
[7] https://www.angelo.edu/live/files/27603-student-handbook-2020-21#page=97
[8] https://www.angelo.edu/current-students/writing-center/academic_honesty.php
[9] https://angelo.policystat.com/policy/token_access/2d2f24d9-0983-4c91-9b43-82e8ccf913b1/
[10] http://www.angelo.edu/incident-form
[11] https://www.angelo.edu/title-ix
[12] https://www.angelo.edu/covid-19/