MATH 1332 (Contemporary Math) SP 2018

Contact Information

Instructor: Mario Barrientos
Office: MCS 209
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Office Hours: MWF 11AM-1PM; T-TR 1-3PM or by appointment.

Textbook

Excursions in Modern Mathematics 9th, Tannenbaum
MYMATHLAB course ID: barrientos31216

Grading

Homework: 20% of your grade
Exams: 80% of your grade (there will be four exams, each 20% of your total grade).

Grade Determination Criteria:
90-100 A; 80-89 B; 70-79 C; 60-69 D; 59 or below F

Attendance and Conduct

I keep a record of student attendance but your grade is not directly affected by absences, lateness, etc. Also, no cell phone use or eating is allowed in class.

Assignments

You will be assigned daily homework assignments which are generally due the next class day. I will not accept late assignments, however, I will drop two of your lowest homework grades. If you miss a test (an excused absence) I will replace the missing test grade with the final exam grade. I will only do this for one exam. Any other missing exams will be given a zero grade. Exam dates are: February 8, March 8, April 12, and the final on May 8. The final exam is mandatory.

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. The full details can be found in ASU Operating Policy OP 10.19 Observance of Religious Holy Days.

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.

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 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
- In the event that the university is closed for a scheduled class time, whatever was scheduled for that day and/or whatever was due that day will be scheduled and/or due on the next scheduled class time.
- All electronic correspondence will be sent to your ASU e-mail account unless other arrangements are made.
- Feel free to come by my office at any time for help. I will definitely be near my office during my office hours (or there will be a note telling you when I will be back). If my office hours are not convenient for you, meet with me to arrange for another time that is more convenient.
- Good luck. I sincerely hope you do well in this course, and I strongly encourage you to use me as a resource outside of class to help you succeed.

All items contained in this syllabus are subject to change as the semester progresses. Students will be notified in advance of any changes.

Course Content

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

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
Schedule (subject to revision)

The subject matter schedule listed below is tentative and subject to change. For current, updated information about course topics, please contact the instructor.

1 Euler Circuit Problems
2 Graphs
3 Graph Concepts
4 Graph Models
5 Euler's Theorems
6 Hamilton Paths and Circuits
7 Complete Graphs
8 Traveling Salesman Problems (TSPs)
9 Strategies for Solving TSPs
10 Test 1
11 Brute Force and Nearest Neighbor Algorithms
12 Fibonacci Numbers
13 The Golden Ratio
14 Gnomons
15 Spiral Growth in Nature
16 Rigid Motions
17 Reflections
18 Rotations
19 Translations
20 Test 1
21 Glide Reflections
22 Symmetry as Rigid Motion
23 Patterns
24 Koch Snowflake
25 Sierpinski Gasket
26 Chaos Game
27 Review of Complex Numbers
28 Mandelbrot Set
29 Exponential and Logistic Growth
30 Collecting Data-Sampling
31 Graphical Descriptions of Data
32 Variables
33 Numerical Summaries-Measures of Spread
34 Test 2
35 W. Edwards Deming and Quality Control
36 Approximately Normal Distributions
37 Normal Curves
38 Standardizing Normal Data
39 The 68-95-99.7 Rule
40 Normal Curves as Models
41 Distributions of Random Events
42 Voting and Apportionment
43 Final Exam
i Observance of Religious Holy Days: http://www.angelo.edu/content/files/14206-op-1019-student-absence-for-observance-of

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

iii Academic Integrity: http://www.angelo.edu/student-handbook/community-policies/academic-integrity.php

iv ASU Writing Center: http://www.angelo.edu/dept/writing_center/academic_honesty.php


vi University Catalog: http://www.angelo.edu/catalogs/