

Math 167 – For All Practical Purposes

Fall 2013

Catalog Description: *Math 167: For All Practical Purposes (Credit 3)* Application of mathematics to real world situations using quantitative methods; includes urban services and elements of management science (optimal routes, planning and scheduling), elements of statistics (sampling/polling methods, analyzing data to make decisions), codes used by stores, credit cards, internet security, cryptography. *Prerequisites:* High school algebra I and II.

Learning Outcomes

Upon successful completion of this course, students will:

- Design optimal and heuristic routes.
- Construct schedules that make the best use of resources.
- Display and analyze data.
- Determine good and bad samples for statistical data.
- Distinguish between good and bad inferences from data.
- Understand and apply the rules for identification numbers.
- Use cryptography to encode and decode information.
- Create a fair division of an item or items.
- Apportion using different apportionment methods.

Core Objectives

Critical Thinking

- Students will synthesize data to look for trends and correlation along with determining if there is bias or bad sampling.
- Students will analyze codes and ciphers to make and break encrypted messages
- Students will think creatively about how resources can be allocated fairly and decide what the best way to divide contested items.

Communication Skills

- Students will model streets, highways and communication infrastructure as a graph.
- Students will diagram machine scheduling problems as a Gantt charts.
- Students will display quantitative data as histograms, stem plots, boxplots, and scatter plots with all units and quantities clearly labeled.

Empirical and Quantitative skills

- Students will solve network, graph theory, scheduling and packing questions using brute force and heuristic models.
- Students will describe data sets by finding relevant descriptive statistics. Students will determine whether or not a result is statistically significant.
- Students will use check digit schemes and prove if the check digits are able to find errors in codes.
- Students will calculate how to divide items fairly and how to apportion representatives using several different apportionment procedures, including the one currently used to apportion for the United States House of Representatives.

Instructor: Dr. Janice Epstein, Blocker 641H (this will change in Oct or Nov), 845-3261

Office Hours: Mondays 10:00 – 11:30 and Wednesdays 11:00 – 12:30. Also by appointment.

Email: j-epstein@tamu.edu. Include your full name and class/section number in all email

Webpage: www.math.tamu.edu/~epstein/Math167

Class Meeting time: Section 502, TR 12:45 – 2:00 in BLOC 169.

Required Materials

- *Textbook: COMAP For All Practical Purpose: Mathematical Literacy in Today's World 8th W. H. Freeman 978-1429215060.*
- *Texas A&M Student ID: You must bring your student ID to class with you.*
- *A Calculator able to find square roots. Programmable calculators will be reset before exams.*
- *WebAssign access for online homework.*
- *An i>clicker.*

Grading

Quizzes	15%
Homework	10%
Exam 1 (Chapters 1, 2, and 3)	20%
Exam 2 (Chapters 5, 6, and 7)	20%
Exam 3 (Chapters 16 and 17)	15%
Exam 4 (Chapters 9, 13, and 14)	20%

Required Averages: A 90–100% B 80–89% C 70–79% D 60–69% F 0–59%

Homework: Homework will primarily be online. The other assignments that are part of your homework grade may include videos, written assignments, PDF form assignments or in-class activities. More information and login link at <http://www.math.tamu.edu/courses/eHomework/>

Quizzes: In-class quizzes will typically occur once per week. Your i>clicker responses will be part of your quiz grade. Quizzes and exams must have work shown in pencil or black/dark blue ink.

Final Exams: The complete final exam schedule is at <http://registrar.tamu.edu//General/FinalSchedule.aspx>

Outside of Class

Office Hours: Please attend office hours for additional one-on-one help.

Extra Help: Evening help sessions and weekly reviews are available for extra help. See

<http://www.math.tamu.edu/courses/helpsessions.html>

<http://www.math.tamu.edu/courses/weekinreview.html>

Practice: I strongly recommend that you practice extra problems on your own from the book. See the suggested homework list on the class webpage.

Electronic Device Policy: Cell phones, laptops, and other electronic devices must be silent and put away during class. Your i>clicker and calculator are the only automatic exceptions allowed. If you wish to take notes on your tablet, ask for an exception.

Attendance & Make-up Policy

Attendance is required in this class.

No make-up exams or late assignments will be accepted without a University-approved excused absence (see the Texas A&M University Student Rules at <http://student-rules.tamu.edu/>). Please contact me as soon as possible if there are any unusual circumstances that you think may be an excused absence.

If you are asked to leave class due to disruptive behavior, you may not make up any assignments missed.

An absence for a non-acute medical service or regular check-up does not constitute an excused absence.

To be excused, you must notify me in writing prior to the date of absence, if possible. Consistent with Texas A&M Student Rules, in cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence. This notification must include an explanation of why notice could not be sent prior to the class.

For injury or illness too severe or contagious to attend class, you must provide confirmation of a visit to a health care professional affirming date and time of visit. The Texas A&M University Explanatory Statement for Absence from Class form will *not* be accepted. It is the student's responsibility to schedule a make-up in a timely manner.

Copyright

All exams, printed handouts and/or assignments, and web-materials are protected by U.S. Copyright Laws. No multiple copies can be made without my written permission. No exams or assignments may be shared with anyone outside of the class.

Academic Integrity Statement

"An Aggie does not lie, cheat, or steal or tolerate those who do."

Upon accepting admission to Texas A&M University, a student immediately assumes a commitment to uphold the Honor Code, to accept responsibility for learning, and to follow the philosophy and rules of the Honor System. Students will be required to state their commitment on examinations, research papers, and other academic work. Ignorance of the rules does not exclude any member of the TAMU community from the requirements or the processes of the Honor System. For additional information please visit:

<http://www.tamu.edu/aggiehonor/>

Disabilities

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit

<http://disability.tamu.edu>

Tentative Class Schedule: All changes will be announced in class, on the web, or via e-mail.

- Week 1 – Ch. 1 (Urban services)
- Week 2 – Ch. 2 (Business efficiency)
- Week 3 – Ch. 3 (Planning and Scheduling)
- Week 4 – Review and Exam #1 (9/19/2013)
- Week 5 – Ch. 5 (Exploring Data: Distributions)
- Week 6 – Ch. 6 (Exploring Data: Relationships) and Ch. 7 (Data for Decisions)
- Week 7 – Ch. 7 (Data for Decisions)
- Week 8 – Review and Exam #2 (10/17/2013)
- Week 9 – Ch. 16 (Identification numbers)
- Week 10 – Ch. 17 (Information Science)
- Week 11 – Review and Exam #3 (11/7/2013)
- Week 12 – Ch. 13 (Fair Division)
- Week 13 – Ch. 14 (Apportionment)
- Week 14 – Ch. 9 (Social Choice)
- Finals – Exam #4
Math 167-502 – Exam #4 on Wednesday, Dec 11 at 8A