

Course title and number	For All Practical Purposes (MATH 167-503)
Term	Fall 2014
Meeting times and location	TR 3:55 – 5:10 PM, Blocker (BLOC) 169

### Course Description and Prerequisites

*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 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 Information

Name	Tamara A. Carter, Instructional Assistant Professor
Email address	tcarter@math.tamu.edu
Office hours	MW 3:00 – 4:00, TR 11:00 – 12:30, TR 3:00 – 3:45 and by appointment
Office location	245A Blocker

### Required Materials

- *Textbook: COMAP For All Practical Purpose: Mathematical Literacy in Today's World 8<sup>th</sup> ed., 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. For exam days, this calculator should NOT be on your phone or tablet. Programmable calculators will be reset before exams, so do not bring a calculator with stored information that you wish to retain.*
- *WebAssign access for online homework*

### Tentative Course Topics and Calendar of Activities

All changes will be announced in class, on eCampus, or via email.

Week 1	Sept. 2, 4	Ch. 1 (Urban services)
Week 2	Sept. 9, 11	Ch. 2 (Business efficiency)
Week 3	Sept. 16, 18	Ch. 3 (Planning and Scheduling)
Week 4	Sept. 23, 25	Review   Exam 1 Sept. 25
Week 5	Sept. 30, Oct. 2	Ch. 5 (Exploring Data: Distributions)
Week 6	Oct. 7, 9	Ch. 6 (Exploring Data: Relationships) and start Ch. 7 (Data for Decisions)
Week 7	Oct. 14, 16	Finish Ch. 7 (Data for Decisions)
Week 8	Oct. 21, 23	Review   Exam 2 Oct. 23
Week 9	Oct. 28, 30	Ch. 16 (Identification numbers)
Week 10	Nov. 4, 6	Ch. 17 (Information Science)
Week 11	Nov. 11, 13	Review   Exam 3 Nov. 13
Week 12	Nov. 18, 20	Ch. 13 (Fair Division)
Week 13	Nov. 25, 27	Ch. 14 (Apportionment)
Week 14	Dec. 2, 4	Ch. 9 (Social Choice)
Week 15	Dec. 9, 11	Review   Reading Day (no classes)
<b>Exam 4 (during the final exam period)</b>	Dec.16, Tuesday	Math 167-503 Exam 4, 1:00 – 3:00 PM

### Grading Policy

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 = [80,90%)   C = [70,80%)   D = [60,70%)   F = [0,60%)

Due to privacy issues, I cannot discuss grades over email or by phone. I reserve the right to lower these cutoffs if I deem that it is appropriate, but you should not expect them to be lowered.

## **Quizzes**

In-class quizzes will typically occur once per week.

## **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/>

## **Exams**

Everything discussed in class, quizzes, and homework is fair game for content on exams. You should also read the textbook. Our exams will be taken during normal class time. Our fourth test will be taken during our final exam time slot. The complete final exam schedule can be viewed at <http://registrar.tamu.edu//General/FinalSchedule.aspx>

## **Attendance & Make-up Policy**

The University views class attendance as the responsibility of an individual student. Attendance is essential to complete this course successfully. University rules related to excused and unexcused absences and make-ups are located on-line at <http://student-rules.tamu.edu/rule07>. Please notify me via email prior to the date of an absence, if possible.

Consistent with Texas A&M Student Rules, in cases where advance notification is not feasible (e.g. accident, or emergency), you must provide notification by the end of the second working day after the absence. This notification should 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 in this case.

It is YOUR responsibility to schedule a make-up if one is needed. Make up exam times can be found at <http://www.math.tamu.edu/courses/makeupexams.html>. Make up exams should be taken within the first two opportunities after an exam. Any assignments given on the day(s) missed will still be due according to the regular schedule. No rule can cover every situation. If you encounter extenuating circumstances, please communicate with me as soon as possible.

## **Extra Help & Preparing for Exams**

### **Your Book**

Your textbook contains very important information. I highly suggest that you read it. Remember that it takes longer to read a math book than a novel. You should read with your pencil in hand so you can take notes and work examples.

### **Your Homework**

Your homework problems were written specifically to reinforce the material that we believe supports the objectives of the course.

### **Your Professor**

Communication is essential. Please communicate with me before class, after class, during office hours, and via email.

### **Your Classmates**

It is also important to communicate with your classmates. You will learn more and be able to build on each other's ideas if you discuss the material with other people. This often makes math study time more pleasant and even more productive. Please consider setting a regular time to meet.

### **Additional Practice**

I strongly recommend that you practice extra problems from the book even though they are not directly for a grade. See the suggested homework list posted in eCampus.

### **Help Sessions**

You can receive help (at no additional charge) from tutors who were specifically hired for this course. You can find the available times at <http://www.math.tamu.edu/courses/helpsessions.html>

### **Week in Review**

You can attend a session that summarizes the prior week's material. This session is taught by a professor and gives you a chance to hear another perspective on the material. You can find the schedule at <http://www.math.tamu.edu/courses/weekinreview.html>

### **Americans with Disabilities Act (ADA)**

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>. If you require accommodation, please see me as soon as possible so that we can make sure you have the necessary paperwork in order.

### **Academic Integrity**

For additional information please visit: <http://aggiehonor.tamu.edu/>

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

Academic integrity is vital to an academic community and essential for all students and professors. As an Aggie, you have agreed to know and uphold the honor code. Please review the website carefully. I will be happy to answer any questions you might have. You will be asked to sign the honor code on your work as a reminder of that commitment. If you ever have a question about whether or not an action would be acceptable under the honor code, please ask your professor BEFORE you take the action. If you don't have time to ask, then consider whether or not you would take the action if your professor was beside you.

For this class, I encourage you to study with your classmates (unless I specifically state otherwise). However, all graded work (exams, quizzes, homework, etc.) must clearly be your own individual work, and you should not discuss graded work with anyone who has not completed that work yet. If you use a source when completing work, cite the source.

### **Copyright of Materials**

All class materials (notes, tests, labs, homework assignments, articles, chapters, etc.) are copyrighted and may not be copied or reproduced without permission.