Math 167 – For All Practical Purposes – Spring 2014

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 or 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.
Math 167 For All Practical Purposes  
Instructor: Dr. Sherry Scarborough  
Office: 209 Blocker  
Email Address: sherry.scarborough@math.tamu.edu  

Emails: In all correspondence, please include your name, your course number, and your section number in the subject line. Please regularly check your TAMU email, as I often send the class emails.

Web Site: http://www.math.tamu.edu/~Sherry.Scarborough/  

Dr. Sherry’s Office Hours: Mondays 11:20am–12:20pm, Wednesdays 11:20am–12:20pm, Thursdays 10:30am–12pm  


Class Notes: Found on: http://www.math.tamu.edu/~sherry.scarborough/167topics.html  

Calculator: Need a simple non-programmable calculator able to perform square roots  

Scantrons: You will need to bring a blank Scantron Form 882-E to each of your Math 167 exams.

Class Times  
- Math 167-502: MWF 9:10 – 10am BLOC 169  
- Math 167-503: MWF 10:20am – 11:10 BLOC 169  
- Math 167-505: MWF 1:50 – 2:40pm RICH 114

Tentative Exam Schedule  
Exam I (Chap 1, 2, 3) Wednesday February 5  
Exam II (Chap 5, 6, 7) Wednesday March 5  
Exam III (Chap 16, 17) Wednesday April 2  

Exam IV (Chap 13, 14, 9) Schedule (follows the final exam schedule)  
- Section 502: Monday May 5 from 8 – 10am BLOC 169  
- Section 503: Tuesday May 6 from 8 – 10am BLOC 169  
- Section 505: Tuesday May 6 from 3:30 – 5:30pm RICH 114

Grading: Each of the 4 exams is 20% for an exam total of 80%, your quiz average 10%, and your online homework 10%. Due to confidentiality, grades will not be discussed via phone or email, only in person.
Grade cutoffs: A is 90 – 100%, B is 80 – 89%, C is 70 – 79%, D is 60 – 69%, and F is 0 to 59%.

Exams: You will need to bring to your exams your Texas A&M student ID, a Scantron Form 882-E, a #2 pencil, a simple non-programmable calculator without its cover, and an eraser. Calculators will be reset before taking exams.

Quizzes: Quizzes will be given in lecture or out of class and may or may not be announced ahead of time. Quizzes may be given at any time during the class, so make sure you arrive on time and stay the whole time for each class. Your note-card quiz-assignment, which is due no later than Friday January 31st, is found at the following web site: http://www.math.tamu.edu/~scarboro/167spring2014welcome.pdf. There will be no makeup quizzes, since at the end of the semester when final grades are calculated your 2 lowest quiz grades, except your note-card grade, are dropped.

WebAssign: All online homework will be based in the online system WebAssign.  
- Everything you will need to know about creating an account and logging in is available here: http://www.math.tamu.edu/courses/eHomework/. Notice the important links on this web site: WebAssign Login Page, Student Help Request Form (this is where you go if you are having any trouble with WebAssign), Student Information Page and FAQ. Now go to the Student Information Page and read the Math 167 link and ALL the links under Student Help Links.  
- A WebAssign account has an access fee, and you will need to “purchase access online” during the first two weeks of school. After that, you risk being locked out of the system and missing important assignments.  
- At the end of the semester when final grades are calculated, your one lowest online homework grade will be dropped.
Help Sessions: Help Sessions are a place to see homework-type problems worked and a place to get online homework help. Help Sessions usually start about the second week of school. There is a Help Session link on my Math 167 web page.

Week-In-Reviews (WIR): Weekly reviews will be given by Dr. Janice Epstein. These include an exam review on the week of your exam. WIR is not held the week immediately after an exam week. The WIR starts the second week of school. See http://www.math.tamu.edu/~epstein/MATH167WIR/ for this semester's WIR or go to the link on my Math 167 web page.

Policies: Policies pertaining to absences, scholastic dishonesty and final examinations are identical to TAMU regulations. Students with an official excused absence are permitted to make up work only for the dates of the absence. All other assigned work, even that assigned on the excused date, is due as assigned.

Attendance: Attendance is required in this class.

Make-Up Policy: No make-up examinations will be given without a university approved excused absence (See the Texas A&M University Student Rules). An absence for a non-acute medical service or regular check-up does not constitute an excused absence. To be excused you must notify Dr. Sherry by email prior to date of absence if such notification is feasible. Consistent with Texas A&M Student Rules, students are required to notify their instructor (Dr. Sherry) by the end of the second school day after missing an examination. 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 makeup! Attendance is required in this course.

Make-Up Exams: According to the student rules, "If an instructor has a regularly scheduled make up exam, students are expected to attend unless they have a university approved excuse." All makeup exams will be given in Blocker 102.

Exam I Make-Up Date/Time: Fri Feb 7 at 4pm or Mon Feb 10 at 7:45pm
Exam II Make-Up Date/Time: Fri Mar 7 at 4pm or Mon Mar 17 at 7:45pm
Exam III Make-Up Date/Time: Mon April 7 at 7:45pm
Exam IV Make-Up Date/Time: Tues May 6 at 7:30pm or Wed May 7 at 7:30pm

Late Policy: No late work will be accepted. No extensions on online homework problem sets will be granted without a verified TAMU University excused absence for the majority of time the homework assignment was available. Extensions will not be made after the due date, since the answers are then available.

Copyright: All exams, printed handouts, class notes, assignments, online homework problems, quizzes, text, and web-materials are protected by U.S. Copyright Laws. No multiple copies can be made without my written permission. No exams, quizzes, or assignments may be shared with anyone outside of this class. Class notes, online material, online homework problems, exams, quizzes, text, handouts, or subsets thereof may NOT be posted on Facebook, Twitter, Yahoo!Answers, YouTube, blogs, wikis, forums, videos, podcasts, or any other social media.

Plagiarism: As commonly defined, plagiarism consists of passing off as one's own the ideas, words, writings, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. Class notes, online material, online homework problems, exams, quizzes, text, handouts, or subsets thereof may NOT be posted on Facebook, Twitter, Yahoo!Answers, YouTube, blogs, wikis, forums, videos, podcasts, or any other social media.

Academic Integrity Statement: Aggie Honor Code: “An Aggie does not lie, cheat, or steal or tolerate those who do.” You are an Aggie and so am I! 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://aggiehonor.tamu.edu/. Students may work together on their suggested practice homework problems. Online homework, individual quizzes, and examinations are to be taken individually. You may not discuss the contents of an exam until they are returned, to do so violates the Aggie Honor Code. The final exam contents are confidential forever since the final exam is property of the mathematics department and will not be returned.

**Aggie Honor Code Violations (cheating):** All Aggie Honor Code and copyright violations will be reported. Violations include copying someone else’s work, acquiring answers from an unauthorized source, allowing someone to copy your work, continue writing on an exam or quiz after time is called, violating copyright laws, having someone else do your assignments, posting class material on any social media, etc. Common sanctions include getting a zero for the assignment, getting an F for the course, not being allowed to drop the course, getting a star by your grade on your transcript indicating academic dishonesty, not graduating with honors, getting expelled, dismissed, or suspended from the university, and/or completing an Honor Council Academic Integrity Development Program course, etc.

**Grade Disputes:** Once you leave class with any graded paper you accept its grade, unless there is a totaling error. All grade disputes must be dealt with at the time you receive them. If the grade was not totaled correctly, you have one week from when the paper was first returned to the class to get the correction made.

**Student ID:** You will need to have your Texas A&M student ID with you for ALL classes.

**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.

**Personal Requests:** You are always welcome to come to my office hours; you do not need an appointment. I encourage you to come, ask questions, as often as you would like. Students who come to office hours can get personal attention and help. If you smoke, please ‘air out’ before visiting. As a courtesy to all, please turn your cell phones and pagers off during all classes and office hours. Thanks!

**Please Note:** While it is critical that you attain the correct answer to a question, you must show correctly, precisely, and accurately its solution (all the steps, labels, explanations, equal signs, models, etc.) in an orderly, clear, concise manner. Where appropriate, circle your final answer. You are responsible for your own learning.

**Emergencies:** On-campus phones: 9-911 Off-campus and cell phones: 911

**Tentative Schedule**
- Week 1: Chapter 1 – Urban services, Chapter 2 – Business efficiency
- Week 2: Chapter 2 – Business efficiency
- Week 3: Chapter 3 – Planning and Scheduling
- Week 4: Review, **EXAM 1 (chapters 1, 2, 3),** Chapter 5 – Exploring Data: Distributions
- Week 5: Chapter 5 – Exploring Data: Distributions
- Week 6: Chapter 6 – Exploring Data: Relationships and Chapter 7 – Data for Decisions
- Week 7: Chapter 7 – Data for Decisions
- Week 8: Review, **EXAM 2 (Chapters 5, 6, 7),** Chapter 16 – Identification numbers
- Week 9: Chapter 16 – Identification numbers
- Week 10: Chapter 17 – Information Science
- Week 11: Review, **EXAM 3 (Chapters 16, 17),** Chapter 13 – Fair Division
- Week 12: Chapter 13 – Fair Division
- Week 13: Chapter 14 - Apportionment
- Week 14: Chapter 9 – Social Choice
- Week 15: Review
Help:
- Bookmark my web page so you will know where to find all important information 
  http://www.math.tamu.edu/~Sherry_Scarborough/
- Bookmark my Math 167 web page
  http://www.math.tamu.edu/~sherry.scarborough/167topics.html
- Read the first day handout and the welcome note found on my Math 167 web page
- Read the class notes and skim the online book before class
- Attend all classes
- Bring your class notes, calculator, pencil, and TAMU student ID to every class
- Work all of your suggested text homework practice problems
- Do all your graded online homework
- Ask questions
- Attend Dr. Sherry’s office hours
- Attend help sessions http://www.math.tamu.edu/courses/helpsessions.html
- Attend Week-In-Review (WIR) and do the problems before going to WIR or looking at the solutions, 
  http://www.math.tamu.edu/~epstein/MATH167WIR/
- Ask me for help with homework problems during office hours
- Keep up with the course
- Form study groups and get together regularly
- Get a personal tutor (a list is available outside Blocker 227)
- Contact the Learning Skills Center (845-4427)
- Contact tutoring@aggieculture.tamu.edu
- Contact Services for Students with Disabilities, if needed, at 845-1637
- Read How is College Different from High School? by TAMU Student Counseling Service at 
  http://www.math.tamu.edu/~scarboro/howiscollegedifferentfromhighschool.pdf
- Read Self Help-Math Study Skills by TAMU Student Counseling Service at http://scs.tamu.edu/?q=node/92
- See TAMU Student Counseling Service Self Help Guides at http://scs.tamu.edu/?q=node/88#academic
- Register for TAMU Student Counseling Services at http://scs.tamu.edu/