Course title and number  For All Practical Purposes (MATH 167)
Term  Spring 2016
Meeting times and locations  
  Section 501 (Blue) TR 9:35 – 10:50 AM .......... BLOC 166
  Section 502 (Green) TR 11:10 AM – 12:25 PM .. BLOC 166
  Section 503 (Yellow) TR 12:45 – 2:00 PM .......... BLOC 166

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  Kathryn Bollinger, Instructional Assistant Professor
Email Address  bollingr@math.tamu.edu (please include your full name and section color)
Office Location  Blocker 247D
Office Hours  MW 1:00–3:00 PM in BLOC 246; and by appointment
Webpage  http://www.math.tamu.edu/~bollingr/
(Visit the link to Math 167 regularly for announcements and important information, as well as for notes, a daily schedule and other helpful links.)
Phone Number  Department of Mathematics: 845-3261

Required Materials

- **Textbook:** COMAP For All Practical Purpose: Mathematical Literacy in Today's World 9th ed., W. H. Freeman. (Print or electronic)
  [ISBN 978-1-319-05209-6 includes the text and WebAssign access as a bundle.]

- **WebAssign access for online homework** (www.math.tamu.edu/courses/eHomework/)

- **A non-programmable calculator that is able to find square roots.** This calculator should NOT be on your phone, tablet, or computer. You will not be allowed to use programmable calculators (such as TI-83/84) on assignments. Please bring an approved calculator to every class. The TI-30X IIS calculator is preferred.

- **Texas A&M Student ID** - Bring your student ID to each class. If you have a question about your grade, please come see me in person and bring your ID.

- You need to use a pencil or a pen with blue or black ink when you submit any written work for this class. You may use additional colored pencils or pens when allowed.

Tentative Course Topics and Calendar of Activities

All changes will be announced in class or via email.

<table>
<thead>
<tr>
<th>Week 1</th>
<th>Jan. 19, 21</th>
<th>Ch. 1 (Urban Services) and start Chapter 2</th>
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<tbody>
<tr>
<td>Week 2</td>
<td>Jan. 26, 28</td>
<td>Ch. 2 (Business Efficiency) and start Chapter 3</td>
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<tr>
<td>Week 3</td>
<td>Feb. 2, 4</td>
<td>Ch. 3 (Planning and Scheduling)</td>
</tr>
<tr>
<td>Week 4</td>
<td>Feb. 9, 11</td>
<td>Review</td>
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<tr>
<td>Week 5</td>
<td>Feb. 16, 18</td>
<td>Ch. 5 (Exploring Data: Distributions)</td>
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<td>Week 6</td>
<td>Feb. 23, 25</td>
<td>Ch. 6 (Exploring Data: Relationships) and start Ch. 7 (Data for Decisions)</td>
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<tr>
<td>Week 7</td>
<td>Mar. 1, 3</td>
<td>Finish Ch. 7</td>
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<tr>
<td>Week 8</td>
<td>Mar. 8, 10</td>
<td>Review</td>
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**Mar. 14 – 18**  SPRING BREAK

<table>
<thead>
<tr>
<th>Week 9</th>
<th>Mar. 22, 24</th>
<th>Ch. 16 (Identification Numbers)</th>
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<tr>
<td>Week 10</td>
<td>Mar. 29, 31</td>
<td>Ch. 17 (Information Science)</td>
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<td>Week 11</td>
<td>Apr. 5, 7</td>
<td>Review</td>
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<td>Week 12</td>
<td>Apr. 12, 14</td>
<td>Ch. 13 (Fair Division) and start Chapter 14</td>
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<tr>
<td>Week 13</td>
<td>Apr. 19, 21</td>
<td>Ch. 14 (Apportionment) and start Ch. 9 (Social Choice)</td>
</tr>
<tr>
<td>Week 14</td>
<td>Apr. 26, 28</td>
<td>Finish Ch. 9 and Review</td>
</tr>
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**Exam 4** (during the final exam period)

**Exam 4**, in our regular classroom
- Sec. 501(Blue): Thurs., May 5th, 12:30-2:30 PM
- Sec. 502(Green): Thurs., May 5th, 3:00-5:00 PM
- Sec. 503(Yellow): Tues., May 10th, 8:00-10:00 AM

http://registrar.tamu.edu/General/FinalSchedule.aspx
Grading Policy

Homework / ICAs 10%
Quizzes 10%
Exam 1 (Chapters 1, 2, and 3) 20%
Exam 2 (Chapters 5, 6, and 7) 20%
Exam 3 (Chapters 16 and 17) 20%
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. At the end of the semester, you will receive the grade you earned, according to the distribution above.

Homework
The graded portion of your homework will mainly be online in WebAssign. Everything you will need to know about logging into your account is available at http://www.math.tamu.edu/courses/eHomework/.

There are also book problems that will not be taken up for a grade but are important for your quiz and test preparation.

In-Class Daily Assignments (ICAs)
At various times throughout the semester, you will be given assignments (that are not homework problems or quizzes) which must be completed before leaving class. In order to complete the ICAs you will need to have loose-leaf notebook paper and something to write with (a pencil or pen with blue or black ink). Always come to class with these materials. Many times the ICAs will be due within the first five minutes of class, so it is imperative that you arrive to class prepared and on time each day. Other times the ICAs may be given at the end of class, so it is also imperative that you do not leave class early. None of the grades on these assignments may be dropped unless you are missing a grade due to a verified University excused absence.

Quizzes
Quizzes will be taken for a grade and may or may not be announced in advance.

Exams
Everything discussed in class, quizzes, and homework is fair game for content on the in-class exams. You should also read the textbook. The first three exams will be taken during our normal class time. Our fourth test will be taken during our final exam time slot.

Scheduled Make-Up Exams: If you have a University approved absence for missing an exam, you will be expected to make up your exam according to the make-up exam schedule. Only if you have a University approved absence for the day of the exam AND the makeup day will you be allowed to use a later option or have other arrangements made. If you are in the situation where you must miss an exam, you must contact me as soon as possible (prior to the absence if there is no emergency or accident) and I will give you information about making up your exam.
**Attendance & Make-up Policy**

Attendance is essential to complete this course successfully. By attendance, I mean arriving to class on time, ready to **actively** participate throughout the entire class time, and not leaving early.

No make-ups will be given without written evidence of an official University excused absence. (See [University Student Rules: http://student-rules.tamu.edu/rule07.](http://student-rules.tamu.edu/rule07)) According to Section 7.3 of the *University Student Rules*, for an absence to be considered excused, “the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. 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 should include an explanation of why notice could not be sent prior to the class.” In addition (and also in accordance with *University Student Rules*), a **written** excuse must be presented upon return to class. Specifically, **in the case of illness too severe or contagious to attend class or in the case of injury, students are required to obtain a confirmation note from a health care professional affirming date and time of a medical office visit regarding the illness or injury and confirming the need of the absence (with permission to verify)** before a make-up will be given. The Texas A&M University Explanatory Statement for Absence will NOT be accepted. An absence for a non-acute medical service does not constitute an excused absence. Students with an **official University excused absence** are permitted to make up work only for the dates of the absence. Moreover (and again in accordance with *University Student Rules*), if an instructor has a regularly scheduled make-up exam, students are expected to attend unless they have a University approved excuse.

It is the student’s responsibility to contact me within the proper time period, in order to schedule make-up assignments.

If class is officially cancelled for any reason, you can expect that the assignments due/taken on the missed class day will be due/taken the next time the class meets.

**Late Work**

All assignments due in class are due at the beginning of class. Late work without a University approved excuse may have a penalty imposed or may not be accepted at all. No extensions on online homework problem sets will be granted without a verified University excused absence.

**Grade Disputes**

If you disagree with any deduction taken on an assignment or exam handed back in class, you must bring it to my attention within two working days of it being returned to be re-graded. Due to privacy issues, I cannot discuss grades over email or phone. If you have a question about your grade, please come see me in person.
Additional Help & Preparing for Exams

Your Professor
I am here to help you but I can’t help if I don’t know there is a problem. I encourage each of you to talk to me, ask questions both in and out of class, come to office hours, send emails, etc. Your best bet for success is active participation!

Class Notes
An outline of notes will be posted before class each day. It will be beneficial to print these out and bring them with you to class. You should review your notes after class, and make sure to get any questions you have about the material in the notes answered, before the next class meeting, if possible. A completed set of notes will NOT be posted after class. You should also review your notes when working on homework or when preparing for quizzes and 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. You should do BOTH the WebAssign and book homework problems.

Additional Practice
I strongly recommend that you practice extra problems from the book even though they are not directly for a grade. See the Additional Practice on the homework list posted on our class webpage.

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.

Help Sessions
Help sessions are an opportunity for you to ask questions and get help with your homework. These sessions are led by students, where you may come and go, as your schedule allows. Once determined, the schedule will be announced in class, posted on our course webpage and additionally posted at http://www.math.tamu.edu/courses/helpsessions.html.

Review Problems
Old Week-in-Review problems and solutions are linked on our course webpage. This is an excellent source of additional practice when reviewing and preparing for quizzes and exams.

LaunchPad
LaunchPad is bundled with the text and WebAssign through ISBN 978-1-319-05209-6 or it can be purchased separately. It provides videos, applets, solutions to selected problems, and other study tools.
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, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. 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

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

You are an Aggie, and so am I! The Aggie Code of Honor will be enforced.

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 on the Honor Council Rules and Procedures, consult http://aggiehonor.tamu.edu.

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.

Note: It is considered Academic Dishonesty to provide falsified documentation in order to obtain an excused absence. If you provide falsified documentation, you will receive an F* in the course.

Classroom Etiquette

Electronic Device Policy

Unless given permission otherwise by me, all electronic devices must be

TURNED OFF AND PUT AWAY WHILE YOU ARE IN THE CLASSROOM!

This means the following...

- You should never have a cell phone out or turned on in the classroom -- before, during, or after class (unless you specifically have been given permission from me before class). If I hear or see your cell phone out in the classroom, I may ask you to leave class. If you are asked to leave the classroom, you will not be allowed to complete any assignments taken for a grade during the remainder of that class.

If I see your cell phone out in the classroom (whether turned on or not) WHILE a grade is being taken (ICA, quiz, or exam), you will receive a ZERO on the assignment and you will be asked to leave the classroom.

- You are not allowed to have any other electronic device (computer, tablet, smart watch, MP3 player, etc.) out or turned on while in the classroom (unless you specifically have been given permission from me before class).

- You should always have your calculator out and ready to use by the time class starts. On exam days, you are not allowed to have your calculator lid.
**Courtesy & Respect**
During class I will stay focused on teaching you mathematics, so please stay focused on *learning* the mathematics being taught. This means you should arrive to class on time and get out all needed materials before class starts, you should stay awake throughout class, you should not be reading a newspaper or working with materials from another course, you should refrain from discussion not related to class, and you should not leave class early (unless there is an emergency or you have talked to me before class). If I feel you are being disruptive or disrespectful during class, you may be asked to leave the room.

**Copyright of Materials**
All class materials (notes, tests, homework assignments, etc.) are copyrighted and may not be copied or reproduced without permission.