Course Title:
Term:
Class Times and locations:

## Instructor Information

Instructor:
Phone number:
e-mail:
Office:
Web page:
Office Hours:

Topics in Contemporary Mathematics II Spring 2016
Section 504: TR 2:20-3:35 Heldenfels 111

Joe Kahlig<br>Department of Mathematics: 845-3261<br>kahlig@math.tamu.edu<br>Blocker 245C<br>http://www.math.tamu.edu/~joe.kahlig<br>Monday and Wednesday: 2pm-4pm<br>Tuesday and Tursday: 9:30am-11am<br>other times by appointment

## Course Description and Prerequisites

Description: Topics in Contemporary Mathematics II (Credit 3) Finite mathematics, matrices, probability and applications.

Prerequisite: High school algebra I and II and geometry. Credit will not be given to more than one of Math 141 and 166.

Calculator Policy: A TI-83, TI-84 (Regular, Plus or Silver edition) or the TI-Nspire (non-CAS version with an 84 faceplate) calculator is REQUIRED. You may use another calculator, provided that it does not perform symbolic mathematics. You are not allowed to share calculators. The only calculator programs allowed are those I give out during class. All other programs must be erased from the calculator. Using a calculator that is not approved or having programs(or notes) on the calculator will be considered a case of Scholastic Dishonesty and will be dealt with in that manner.

## Learning Outcomes

This course is focused on quantitative literacy in mathematics found in everyday life. Upon successful completion of this course, students will be able to:

- Understand and apply the rules of logic and sets.
- Recognize patterns in order to understand the principles of probability and counting and apply these concepts to a variety of problems; for instance, finding the probability of drawing a particular hand from a deck of cards
- Identify types of random variables and be able to calculate probabilities and statistics for these random variables.
- Apply the concepts of finance to everyday experiences, such as paying off mortgages and saving for retirement.
- Understand matrices and their relationships to applications including solving systems of linear equations and solving problems involving Markov processes and game theory.


## Textbook and Resources

Textbook: Applied Finite Mathematics by Tomastik and Epstein - ISBN: 1133444288 (loose-leaf) will be provided in electronic book format through the WebAssign system. Buying a paper copy of the textbook is optional. The solution manual is also optional. Information on how to access your ebook can be found under the Student Information Page at http://www.math.tamu.edu/courses/eHomework/. Look under the Math 166 link.

Web Page: My class web page contains a variety of resources for this class. Here is a list of some of them.

- Blank version of the lecture notes.
- Completed lecture notes (posted after each section is completed).
- My additional homework problem sets(with solutions) for this course.
- My old week in review and exam reviews.
- Solutions to the exams.
- Instructions for the TI-84.

Week in Review: The Week in Review sessions are conducted by an instructor each week and will highlight the material covered for the previous week. A link to the current review(as well as links to previous reviews) is posted on my web page. The week in review schedule may also be found at http://www.math.tamu.edu/courses/weekinreview.html

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. The help session schedule may be found at http://www.math.tamu.edu/courses/helpsessions.html

## Grading Policies

Homework: Homework for this course primarily consists of electronic assignments that will be worked and submitted in the WebAssign system. The homework for a section will be due approximately 3 days after the lecture over that material. For every assignment, you may request an extension of an additional two days. Any problem submitted during the extension period will only receive half credit. Directions on how to use the webassign system can be found on my web page. At least one homework assignment will be dropped when computing the average.

Exams: There will be three in class exams and a final exam. I will not curve your test grades. If you miss the exam for an university approved reason, a makeup can be taken. Once an exam is returned, I will not give a makeup for that exam. If you believe that you have a valid reason for receiving a makeup after the exams have been returned, then talk to me. Any question regarding grading/scoring must be done within one week of the return of the exam or no change to the grade will be made. The final exam is comprehensive.

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Tentative Exam Schedule
\begin{tabular}{ll} 
Exam 1: & February 11 \\
Exam 2: & March 10 \\
Exam 3: & April 14 \\
Final Exam: & Section 504: Tuesday, May 10 from 1pm- 3pm
\end{tabular}
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## Grading Scale:

| 3 Exams @ 20\% each | $60 \%$ | $\mathrm{~A}=90-100$ |
| :--- | ---: | :--- |
| Homework | $15 \%$ | $\mathrm{~B}=80-89$ |
| Final Exam | $25 \%$ |  |
| Total | $100 \%$ | $\mathrm{C}=70-79$ |
|  |  | $\mathrm{D}=60-69$ |
|  | $\mathrm{~F}=0-59$ |  |

## Attendance and Make-up Policies

- The University views class attendance as an individual student's responsibility. It is essential that students attend class and complete all assignments to succeed in this course. University student rules concerning excused and unexcused absences as well as makeups can be found at http://student-rules.tamu.edu/rule07.
- Excuses for absences during an exam must be substantiated by appropriate documentation. Notification before the absence is required when possible. Otherwise, you must notify me within 2 working days of the missed exam to arrange a makeup. Providing a fake or falsified doctor's note or other falsified documentation is considered academic dishonesty, will be reported to the Aggie Honor Council, and will result in an F* in the course.
- All make-up exams must be scheduled, with me, for either one of the times provided by the Math Department or a time that is agreeable to both of us. According to Student Rule 7, you are expected to attend the scheduled makeup unless you have a University-approved excuse for missing the makeup time as well. If there are multiple makeup exam times, you must attend the earliest makeup time for which you do not have a University-approved excuse. The list of makeup times will be available at http://www.math.tamu.edu/courses/makeupexams.html.
- The last day to Q-Drop this class is April 19th.


## Class Announcements, E-Mail Policy and Communications

Class announcements will be posted to my class web page and sent to your university e-mail account. If you send me an e-mail, please include your name and course information(i.e.class and section ) as well as any additional information that I might need to help respond to your e-mail.

## 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.

## Academic Integrity

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

## Course Topics (Tentative weekly schedule)

| Week | Topics | Sections |
| :---: | :--- | :--- | :--- |
| 1 | Logic, truth tables, sets | L.1, L.2, 1.1 |
| 2 | Number of elements in a set, sample spaces and events, <br> basics of probability | $1.1-1.4$ |
| 3 | Rules for probability, conditional probability, independent <br> events | 1.51 .6 |
| 4 | Bayes' Theorem. Review. Exam 1(Ch L and 1) | 1.7 |
| 5 | Multiplication principle, permutations, combinations | $2.1-2.2$ |
| 6 | Probability applications of counting principles, Bernoulli <br> trials, random variables | $2.3-2.4,3.1$ |
| 7 | Random variables and histograms, measures of central ten- <br> dency, measures of spread | $3.1-3.3$ |
| 8 | The normal distribution, Review. Exam 2 (Ch 2 and 3) | 3.4 |
| 9 | Simple and compound interest, annuities, sinking funds | F.1-F.3 |
| 10 | Amortizations, introduction to systems, writing systems of <br> linear equations, solving systems of linear equations with <br> unique and non-unique solutions | F.4, 4.3-4.4 |
| 11 | Systems of linear equations with non-unique solutions, ma- <br> trices, matrix multiplication with applications | $4.4,5.1-5.2$ |
| 12 | Inverse matrices, Review, Exam 3(Ch F, 4, 5) | 5.3 |
| 13 | Markov processes, regular Markov processes, Absorbing <br> Markov processes | M.1-M.3 |
| $14 / 15$ | Game theory, Review for Final Exam | G.1, G.2 |

