INSTRUCTOR: Dr. Rafael Bakhtavoryan  
Office: Agricultural Science Building, Room 154  
Phone: (903) 886-5367  
Email: Rafael.Bakhtavoryan@tamuc.edu (please use "AEC 597" as the subject of the email)

CLASS SECTION: 01E

CLASS MEETING: Tuesdays and Thursdays at 11:00 a.m.-12:15 p.m., AGIT Room 148

OFFICE HOURS: My scheduled office hours are from 2:30 p.m. to 3:30 p.m. Tuesday and Thursday, or by appointment (email is the best way of communication for making appointments). Also, I keep an open-door policy. So, feel free to stop by my office and ask questions anytime. In case I am not available or cannot meet with you at that time, send me an email and we will make an appointment.

REQUIRED READING:
- McCarl, B. A. and T. H. Spreen. “Applied Mathematical Programming Using Algebraic Systems.” Select chapters from this draft text will be provided to students.
- Instructor’s PowerPoint presentation slides and the supplemental material provided throughout the semester.

COURSE DESCRIPTION: The course introduces the fundamentals of linear programming, forecasting, and simulation based on statistical and economic theories using statistical software packages. The first part of the course is devoted to the fundamentals of linear programming, where students learn how to construct, solve, and interpret different types of linear programming models applying Solver (Excel add-in).  
The second part of the course focuses on different quantitative techniques (regression-based models to capture linear and non-linear trends, seasonality, and cyclical and structural variations, as well as moving average, exponential smoothing, and time series models) for forecasting economic data. Emphasis will be on developing forecasts for making better economic decisions in a business context. Simetar (Excel add-in) will be used for this part of the course.  
The third part of the course is centered on teaching the fundamentals of risk analysis and decision-making using simulation. Emphasis is on constructing, validating, and using stochastic simulation models that include both univariate and multivariate probability distributions to incorporate risk into business decision-making using Simetar.
COURSE OBJECTIVE: The objective of this course is to teach graduate students the fundamentals of linear programming, forecasting, and simulation focusing on the application of these techniques to solve actual problems in the competitive business environment. The course is designed to equip students with practical skills to assist them in making educated economic decisions in a business context.

STUDENT LEARNING OUTCOMES: After studying all materials and resources presented in this course, students will be able to:
1. Formulate linear programming problems.
2. Solve linear programming problems using Solver.
3. Interpret the results from the solution of different types of linear programming problems.
4. Develop various forecasting techniques.
5. Produce economic forecasts.
6. Construct, validate, and use stochastic simulation models to include risk into business decision-making using Simetar.
7. Make recommendations to business managers to facilitate their decision making process.

LECTURE TOPICS:
Introduction, review of syllabus and eCollege

Linear programming
Introduction to Mathematical Programming and Linear Programming
Basic Linear Programming Problems: Graphical and Corner-Point Solutions
Solving Linear Programming Problems in Excel
Formulating an Applied Linear Programming Problem
Transportation and Feed Mix Problems
Joint Products Problem
Assembly and Disassembly Problems
Risk Modeling

Forecasting
Introduction to Forecasting and Simulation
Linear and Non-Linear Trend Models
Structural Variation Model
Seasonal Variation Models
Cyclical Variation Models
Time-Series Forecasting

Simulation
Stochastic Simulation and Developing Simulation Models
Distributions Frequently Used for Simulation and Parameter Estimates for Univariate Probability Distributions
Parameter Estimation for Multivariate Probability Distribution
Model Verification and Validation
Scenario and Sensitivity Analysis
Ranking Risky Scenarios
An Application of a Simulation Model: Feasibility Analysis; Inventory Management; Project Management; Bid Analysis (if time permits)
**GRADING POLICY:** Your grade for the semester will be a weighted average of class participation, daily review quizzes, homework assignments, and three in-class exams.

- Class participation: 5%
- Daily review quizzes: 5%
- Homework assignments: 15%
- Exam 1: 25%
- Exam 2: 25%
- Exam 3: 25%

**GRADING SYSTEM:** Course grading is done according to the following scale:

<table>
<thead>
<tr>
<th>Range</th>
<th>Letter Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>90-100</td>
<td>A</td>
</tr>
<tr>
<td>80-89.99</td>
<td>B</td>
</tr>
<tr>
<td>70-79.99</td>
<td>C</td>
</tr>
<tr>
<td>60-69.99</td>
<td>D</td>
</tr>
<tr>
<td>Less than 60</td>
<td>F</td>
</tr>
</tbody>
</table>

**CLASS PARTICIPATION:** The goal of class participation is to provide students with an incentive to come to class prepared and having read the appropriate course material. There is a couple of ways for you to earn class participation points. First, you can earn them by correctly answering questions posed by the instructor. Second, you can earn participation points by contributing to class discussions through thoughtful, timely, and constructive ideas/comments, as called upon by the instructor, or on a voluntary basis. You will record your own participation points and the associated questions you answered or ideas/comments you voiced to earn the participation points on a piece of paper that you will have to give to the instructor at the end of the class. Make sure you also write your name, the date, and the course title on the paper. If you fail to give the instructor the paper with the points, associated questions and ideas/comments, your name, the date, and the course title at the end of the class, you will not be given any participation points for that class.

I will give full credit for class participation (5%) to a student with maximum points at the end of the semester. The rest of students’ class participation will be evaluated relative to the full-credit student’s total points. You can email me asking about your total participation points at the moment. I will keep you posted on the maximum points earned at the time throughout the semester so that you can see where you are at as far as class participation.

**DAILY REVIEW QUIZZES (DRQs):** The DRQs will be given almost every class on material covered in the prior class period. DRQs are intended to: (1) motivate you to come to every class (2) motivate you to study on a regular basis, and (3) give you and your instructor immediate feedback on your progress. No make-up DRQs will be given and a grade of zero will be assessed for the missed DRQ.
HOMEWORK ASSIGNMENTS: Homework assignments will be assigned regularly. Homework assignments are intended to help students enhance understanding of the material covered in class. Homework assignments must be submitted to the instructor on the due date at the beginning of the class. No late submission of a homework assignment will be accepted and a grade of zero will be assessed for it. If you expect to miss class, you can submit your homework assignment early. If necessary, homework assignments will be discussed in class to help students with homework problems.

EXAMS: Other than for university-excused absences or a valid doctor’s excuse, no make-up exams will be given. If an exam is missed a grade of zero will be assessed for it. Students cannot use a programmable calculator for exams. A simple 4-function (addition, subtraction, multiplication, and division) calculator is sufficient for all problems. Also, no use of cell phones as calculators is allowed for exams.

A ROADMAP FOR SUCCESS IN AEC 597 & MY EXPECTATIONS OF YOU:
1. Come to class in a timely manner and stay for the duration of the class.
2. Prior to class, read the assigned readings, print and review the relevant PowerPoint slides.
3. Participate in class discussions sharing your insights through your questions and comments.
4. Complete and turn in course assignments at the scheduled time.
5. Use the web to actively seek out other relevant sources that fit your learning style and help you better understand the material.
6. Use your instructor as a resource for understanding the course material during the office hours.
7. Come to exams prepared.

COMMUNICATION: All the PowerPoint presentations, handouts, syllabus, homework assignments and other course-specific material will be available on eCollege. It is your responsibility to check eCollege, download the appropriate class material, print it out (if necessary), read it or solve the problems, and bring it to the class to facilitate the note taking. In addition, the grades for all graded materials will be entered into eCollege as we progress through the semester. You will need your CWID and password to log in to the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@online.tamuc.org. The Student Orientation/Tutorial link for eCollege is available under the “My Course List” subtab of the “My Courses” tab of the eCollege website. There you will see the following link: “.NExT Student Orientation Tutorial”. The main objective of this tutorial is for you to learn how to submit documents, take online exams, post comments on discussion boards, and do many other things on eCollege.

IMPORTANT DATES:
August 29th, Monday: First day of classes.
November 23rd - November 25th: Thanksgiving Break (No Class).
December 9th, Friday: Last day of classes.
December 13th, Tuesday: Final Exam (Exam 3), 10:30 a.m.-12:30 p.m.
STUDENTS WITH 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 have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services
Texas A&M University-Commerce
Gee Library
Room 132
Phone (903) 886-5150 or (903) 886-5835
Fax (903) 468-8148
StudentDisabilityServices@tamuc.edu

COUNSELING CENTER: A student that faces a crisis or a serious and unforeseeable event that affects his/her class performance must contact the Counseling Center, Student Services Building, Room 204, Phone (903) 886-5145. If important class material or course assignments are missed because of such crisis or event, the student must contact the instructor as soon as possible.

GENERAL POLICIES FOR CLASSES: All students enrolled at the University will follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. See Student’s Guide Handbook, Rules and Procedures, Code of Student Conduct (http://www.tamuc.edu/CampusLife/documents/studentGuidebook.pdf).

ACADEMIC INTEGRITY: Students must follow the Code of Student Conduct in the Student Guidebook (http://web.tamuc.edu/admissions/studentGuidebook.aspx). Any form of plagiarism or academic dishonesty will not be tolerated. Academic honesty is defined on Chapter 13 Students (Academic) of the TAMUC Rules and Procedures (http://web.tamuc.edu/aboutus/policiesproceduresstandardsstatements/rulesprocedures/):
“Academic dishonesty” includes, but is not limited to, plagiarism (the appropriation or stealing of the ideas or words of another and passing them off as one’s own), cheating, collusion (the unauthorized collaboration with others), and abuse (destruction, defacing, or removal) of resource material.

CAMPUS CONCEALED CARRY: Texas Senate Bill - 11 (Government Code 411.2031, et al.) authorizes the carrying of a concealed handgun in Texas A&M University-Commerce buildings only by persons who have been issued and are in possession of a Texas License to Carry a Handgun. Qualified law enforcement officers or those who are otherwise authorized to carry a concealed handgun in the State of Texas are also permitted to do so. Pursuant to Penal Code (PC) 46.035 and A&M-Commerce Rule 34.06.02.R1, license holders may not carry a concealed handgun in restricted locations. For a list of locations, please refer to http://www.tamuc.edu/aboutUs/policiesProceduresStandardsStatements/rulesProcedures/34SafetyOfEmployeesAndStudents/34.06.02.R1.pdf and/or consult your event organizer. Pursuant to PC 46.035, the open carrying of handguns is prohibited on all A&M-Commerce campuses. Report violations to the University Police Department at 903-886-5868 or 9-1-1.

NOTE: The instructor reserves the right to make changes to the syllabus as needed. If changes are made, you will be notified of them ahead of time.