

MATH 561.01R & 41S: STAT COMPUTING AND DESIGN OF EXPERIMENTS
SPRING 2013

CONTACT INFORMATION:

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OFFICE HOURS : MW 11:00-11:50am & 1:15-2:05pm, F 11:00-11:50am
R 6:30-7:20pm (MPLX), otherwise by appt.

DESCRIPTION AND POLICIES:

1. CLASS SCHEDULE: R 7:20p-10:00p, MPLX 131 (41S) & BA 338 (01R)
2. TEXTBOOK: Statistical Computing With R by Maria L. Rizzo. (Recommended)
Computational Statistics by Günther Sawitzki. (Recommended)
3. WEBSITE: An eCollege website has been created for the course which may be accessed from student myLEO accounts following the eCollege and then the My Courses tabs. All files and documents that the instructor shares with the class will be posted in the Doc Sharing folder in course website.
4. COURSE DESCRIPTION: A computer oriented statistical methods course which involves concepts and techniques appropriate to design experimental research and the application of the following methods and techniques on the digital computer: methods of estimating parameters and testing hypotheses about them, analysis of variance, multiple regression methods, orthogonal comparisons, experimental designs with applications. Prerequisite: Math 401, 501.
5. SOFTWARE: *Mathematica* and R software are required for the course. They will be used extensively for manipulating data and carrying out computations in classroom discussions and in homework exercises and projects. *Mathematica* 9.0 is installed and available in Mathematics computer lab in BIN 328. Personal student licenses may be purchased online at the Wolfram *Mathematica* website <http://www.wolfram.com/products/student>. R is a free software environment for statistical computing and graphics that may be downloaded at <http://www.r-project.org>.
6. TESTS & PROJECTS: There will be one test/project (200 points) and a comprehensive final/project (200 points). Test problems will be similar to homework exercises. No make-up test will be given without an official, written, university accepted excuse. The student must contact the instructor the next working day and present the documented excuse to make up a test.

7. **HOMEWORK** Homework will be assigned in every class meeting on a regular basis. Assignments will be due the next class day and will be turned in electronically through eCollege website created for the course. Selected assignments and problems will be graded only, but all homework problems should be worked out. You may work in groups unless otherwise instructed, however the paper you turn in must be your own work. Late homework is not accepted. Attendance may be used to calculate the homework grade. Homework and/or attendance score will make 50 points of the final grade.
8. **LEARNING OUTCOMES:** Students who complete this course successfully will
- learn the *terminology* of statistical computing and design of experiments;
 - learn the *methods* used in computational statistics;
 - learn the *applications* of theoretical results to practical problems.
9. **TENTATIVE COURSE OUTLINE:**
- Intrduction to Mathematica and R Environment
 - Probability and Statistics Review
 - Methods for Generating Random Variables
 - Visualization of Multivariate Data
 - Monte Carlo Integration and Variance Reduction
 - Monte Carlo Methods in Inference
 - Bootstrap and Jackknife
 - Permutation Tests
 - Markov Chain Monte Carlo Methods
 - Probability Density Estimation
10. **GRADING SCALE:** All scores will be added and a letter grade will be assigned according to the following table.
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|---|---------------|
| A | 406 - 450 pts |
| B | 361 - 405 pts |
| C | 316 - 360 pts |
| D | 271 - 315 pts |
| F | 0 - 270 pts |
11. **TENTATIVE EXAM SCHEDULE:**
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|---------|---------|-----------------------|----------|
| Midterm | 200 pts | Monday March 07, 2013 | in class |
| Final | 200 pts | Thursday May 09, 2013 | in class |

12. OTHER IMPORTANT DATES:

March 11-15, 2013	Spring break
March 29, 2012	Last day to drop a class
April 26, 2012	Last day to withdraw from Spring 2013
May 03, 2012	Last class day

13. MISCELLANEOUS: Your enrollment in this course indicates that you agree to observe all the conditions and regulations of this syllabus and the Student Handbook. Your test and homework scores may be filed to be used anonymously for educational research.

Students are required to attend every class meeting and be punctual. Policies pertaining to absences, tardiness and scholastic dishonesty are identical to TAMU-Commerce regulations given in the Student Handbook. All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment (See Student's Guide Handbook, Policies and Procedures, Conduct). Disruptive behavior (including use of electronic devices in classroom) and scholastic dishonesty in any form will not be tolerated.

Students requesting accommodations for a disability should contact the 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, or Email: StudentDisabilityServices@tamuc.edu.

Any possible changes to be made in this syllabus by the instructor during the semester will be announced in class.