

ESI 6247 - Statistical Design Models

Industrial and Management Systems Engineering
University of South Florida, Tampa

INSTRUCTOR: Hui Yang, Ph.D.
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OFFICE HOURS: TR 1:30-3:30 pm (other times by appointment)
CLASS SCHEDULE: TR 3:30pm - 4:45pm CIS1023
PREREQUISITE: Basic probability theory and linear regression at the undergraduate level

TEXTBOOK:

Experiments: Planning, Analysis and Parameter Design Optimization
Jeff Wu and Mike Hamada, 2nd edition, 2009, John Wiley.

SOFTWARE:

MATLAB® will be used for some homework assignments in this class. It is available in College of Engineering laboratories, or obtain the student version for use at home. Tutorials for MATLAB can be found in the following link: <http://www.eng.usf.edu/~huiyang/ESI6247design.htm>

TENTATIVE TOPICS:

- 1) Basic concepts for experimental design and introductory regression analysis (Chapter 1)
- 2) Experiments with a single factor and analysis of variance (Chapter 2)
- 3) Experiments with more than one factor, blocking, Latin squares, analysis of variance and covariance, random effects models, other analysis techniques (Chapter 3)
- 4) Full factorial experiments at two levels, comparison with “one-factor-at-a-time” plans, analysis of location and dispersion, choice of optimal blocking schemes (Chapter 4)
- 5) Fractional factorial experiments at two levels, maximum resolution and minimum aberration for choosing optimal designs, choice of optimal blocking schemes (Chapter 5)
- 6) Response surface methodology for process optimization and improvement (Chapter 10)

GRADING POLICY

2 Exams - 35 pts each
Quizzes/homework - 30 pts
1 Comprehensive Final Exam - 35 pts

The top two scores from the three exams will be added to and the total quiz/homework score to obtain the total grade for the course (out of a total of 100 pts). No make-up exams unless previous arrangements have been made. Students will be expected to attend class and prepare assignments. Habitual failure to do so will result in a reduced grade. An incomplete grade will only be given when a student misses a portion of the semester because of illness or accident. Cheating on examinations, plagiarism and other forms of academic dishonesty are serious offenses and may subject the student to penalties ranging from failing grades to dismissal.

Grading scale will be used: A: 90+; B: 80+; C: 70+; D: 60+, F: <60 (College of Engineering Rule: Only grades of C or better will be accepted in all Math, Science, and Engineering courses).

CLASS POLICY

- Quiz will be collected **in class**. No make-up quiz will be given. Homework problem sets will be assigned during the semester. Assigned homework will be collected in class for on campus students. Homework is due one week after it is assigned. Distance Learning students must submit homework through Blackboard on the due date. No late homework will be accepted.
- During class time, please **turn off** all laptops, cell phones, beepers and pagers.
- Always bring your textbook to class. Also bring your calculator, notebook, pencils/pens, and eraser.
- **Exams must be taken on the scheduled exam dates.** Students are required to arrange with the instructor in advance for a make-up exam in the event of extenuating circumstances that prevent them from taking the exam as scheduled. In the event of an unforeseen emergency that prevents the student from taking

the exam as scheduled, the student must provide documentation to the instructor before a make-up exam can be arranged.

- Exams will be closed book, closed notes. One 8 ½ x 11 formula sheet can be used. Be sure to bring your calculator. There will be absolutely no sharing among students of formula sheets or calculators.
- If you believe there was an error in the grading of an exam, you may submit the entire exam for a regrade. This must be done ***within one week*** from the date the exam was returned. The entire exam will be regraded, so that you may gain, or lose, points by resubmitting.
- Communication in the course will be done through official electronic means: USF assigned e-mail address and the course web site in the USF portal (<https://my.usf.edu>). Students are responsible for all information conveyed during class and on Blackboard (myUSF Portal). It is the student's responsibility to make sure they are receiving their official USF email. Please see <http://una.acomp.usf.edu> for more details.

INSTRUCTOR'S COMMITMENT

You can expect your instructor to be courteous, punctual, well-organized, and prepared for the lecture and other class activities; to answer questions clearly; to be available during office hours or to notify you beforehand if he is unable to keep them; and to grade uniformly and consistently according to the posted guidelines.

STUDENTS WITH DISABILITIES SERVICES

The University recognizes and values students with disabilities. Students with disabilities participate in all aspects of university life. Academic accommodations are arranged through the Students with Disabilities Services office. Students with Disabilities Services (SDS) make the final determination as to the type of academic accommodations that can be rendered for students with disabilities. Each student is responsible for self-identifying and applying for accommodations and services at this office. The process of applying for services is described in detail in the SDS website www.sds.usf.edu. Information Sessions are provided for students, parents, and other concerned persons. The dates and times of these Information Sessions are on the SDS website.

USF POLICY ON DISRUPTION OF ACADEMIC PROCESS

Disruptive students in the academic setting hinder the educational process. Although disruptive student conduct is already prohibited by the Student Code of Conduct, the purpose of this policy is to clarify what constitutes disruptive behavior in the academic setting, what actions faculty and relevant academic officers may take in response to disruptive conduct, and the authority of the Office of Student Rights and Responsibilities or designated office handling conduct issues in Student Affairs to initiate separate disciplinary proceedings against students for disruptive conduct. For further information, please go to the undergraduate catalog: <http://www.ugs.usf.edu/pdf/cat0910/08acapol.pdf>.

USF POLICY ON EMERGENCIES

In the event of an emergency, it may be necessary for USF to suspend normal operations. During this time, USF may opt to continue delivery of instruction through methods that include but are not limited to: Blackboard, Elluminate, Skype, and email messaging and/or an alternate schedule. It's the responsibility of the student to monitor the Blackboard site for each class for course specific communication, and the main USF, College, and department websites, emails, and MoBull messages for important general information.

COURSE WEBSITE

The course has a web site in the USF Portal. You can access the course web site at <https://my.usf.edu>. You will need a USF NetID and password in order to have access. If you do not already have a USF NetID, you can obtain one by going to <https://una.acomp.usf.edu>, clicking on Activate your NetID, and filling out a few simple questions.

Procedure to log onto the website:

- 1) Go to <https://my.usf.edu>
- 2) Log into myUSF using your USF NetID and password.
- 3) Click on the Courses tab, and then click on the course title.
- 4) Look for course information by clicking on the buttons: Announcements, Syllabus, Instructor(s), Course Documents, Assignments, Work Groups, Discussion Board, External Links, My Grades, Course Tools, and Communications.

Check this website frequently for: Course syllabus, important announcements, homework sets, lectures notes, lab guidelines, grades, and additional resources.