

Standardized Syllabus for the College of Engineering

EMA 6808: Error Analysis & Optimization Methodologies in Materials Research Spring 2016
(1991 & EDGE)

1. Course Description: Statistical approach to materials research, basic and relevant statistical concepts, error analysis, factorial matrices, reducing variance, nested designs and sampling plans, mixture designs, optimization techniques, response surface method, and Taguchi method. (3 Credit Hours)
2. Course Objectives: At the end of the course the students should be familiar with the most important methods for error analysis and for design of experiments in MSE. In addition, the course will provide students with a number of tools for planning the experiments forming part of their Ph.D. research, as well as for analyzing and reporting the results obtained.
3. Instructor: **Dr. Juan C. Nino**
 - a. Office location: **166 Rhines Hall**
 - b. Telephone: **(352) 846 3787**
 - c. E-mail address: **jnino@mse.ufl.edu**
 - d. Office hours: **M,W 10:00-11:00 am; via e-mail or by appointment**
4. Teaching Assistant: TBA/NONE
 - a. Office location:
 - b. Telephone:
 - c. E-mail address:
 - d. Office hours:
5. Meeting Times: **T 9:35 – 11:30 pm, R 9:35 – 10:25 pm**
6. Meeting Location: **CSE E118**
7. Textbooks
 - Required:**
 - a. Title: Design and Analysis of Experiments
 - b. Author: Douglas C. Montgomery
 - c. Date / edition: 2013, John Wiley & Sons, Inc. SPECIAL EDITION
 - d. ISBN: 9781119245339
8. **On the Web:** This course will use CANVAS extensively as a communication and archival tool. The students can access all relevant course information (course notes, homework, problem sets, solutions, announcements, grades, etc.) via the CANVAS entry link: <http://elearning.ufl.edu>.
9. Attendance and Expectations: Attendance is **strongly** suggested since as much as 20% of the grade (for on campus students) comes from attendance, in-class work, and participation. **All electronic devices (phones, etc.) should be turned off or in silent mode. Use of smartphones, laptops, tablets or similar personal computers is not allowed unless explicitly requested by the individual student the first day of class and for note taking purposes only.**
10. **How to Ensure a Response to Your E-mail:** ONLY e-mail me at jnino@mse.ufl.edu. DO NOT USE CANVAS MAIL. Furthermore, because of the volume of e-mails I receive, you always need to identify yourself and the course. In the subject line you should always include the course number (EMA6808) and your first and last name. Please begin your e-mail with a salutation. [I know that personal e-mails and texts are often sent without even a name to address the recipient at the opening of the communication, but professionally that is unacceptable]. Close your e-mails by typing your name. Check your e-mail for grammar and spelling. Be concise. If I have to sift through what you have written, my response time drops significantly. All of these guidelines are to promote professionalism. If you need help with writing, let me know.

11. Course Outline: Below is the tentative schedule of the topics and meeting sessions.

Date	Topic
Jan	
	Introduction and Review of Conceptual Prerequisites
5	Course Description, Objectives and Methodology, Statistics Review
7	Overview of Statistical Techniques in Experimentation
12	Simple Comparative Experiments I
14	In Class Exercise (Online)
19	Simple Comparative Experiments II
21	Analysis of Variance I
26	Analysis of Variance II
28	Analysis of Variance III
Feb	
2	Randomized Blocks I
4	Randomized Blocks II
9	Take Home Exam Due in Class (Online)
11	Introduction to Factorial Design
16	Two-Factor Factorial Design I
18	Two-Factor Factorial Design II
23	General Factorial Design I
25	General Factorial Design II
Mar	
8	2-k Factorial Design I
10	2-k Factorial Design II
15	2-k Factorial Design III
17	Blocking and Confounding I
22	Blocking and Confounding II
24	Two Level Fractional Factorial Design I
29	Two Level Fractional Factorial Design II
31	Two Level Fractional Factorial Design III
Apr	
5	Take Home Exam II Due in Class (Online)
7	Group Presentation Dry Runs (Discussion Board)
12	Group Presentations I
14	Group Presentations II
21	Group Presentations III (EDGE Video Conference)

12. Grading: **Attendance, Group Exercises, and Participation 10% (ON-CAMPUS ONLY).**

There will be a number of in class activities and exercises given out to work out in groups during class. The exercises will not be graded but handing in a recognizable effort/attempt to solve the problem is required to receive full credit. Attendance will be verified randomly.

Exams (First 20%, EDGE 25%, Second 30%, EDGE 35%). There will be three take home individual exams as indicated in the outline. These are individual exams and being take home ones, you are allowed to consult written/published sources. However, as part of your consultation process during the exam period you are not allowed to communicate in any form with other human beings (besides the instructor) about the exam. That is, the use of text, interaction with bounty web sites, or any other internet/wireless form of active communication is strictly prohibited as this will be considered cheating and will be result in disciplinary action.

THERE WILL BE A FINAL PROJECT (40%, EDGE 40%) but no FINAL EXAM.

13. Grading Scale: The final grade of the course will be calculated based on the percentage of maximum course score as follows:

Percentage	≥92	≥88	≥84	≥80	≥76	≥72	≥68	≥65	≥62	≥59	≥56	<56
Letter Grade	A	A-	B+	B	B-	C+	C	C-	D+	D	D-	E
Grade Points	4.0	3.67	3.33	3.0	2.67	2.33	2.0	1.67	1.33	1.0	0.67	0

In the event that the class average is below 72%, the distribution will be shifted so that the average equals 72%. In order to graduate, graduate students must have an overall GPA and an upper-division GPA of 3.0 or better (B or better). Note: a B- average is equivalent to a GPA of 2.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit:

<http://gradschool.ufl.edu/catalog/current-catalog/catalog-general-regulations.html#grades>

14. Make-up Exam Policy: No make-up of the exam will be given. Students who do not turn in the exam before the deadline will receive a score of zero points in that exam. Exceptions will be made only in extraordinary circumstances (verified personal emergency, etc.). In such cases an additional exam will be scheduled during the finals week. For EDGE students the deadline for the exams will be the same dates given the advanced notice. If needed submission will be administered through the EDGE office.
15. Honesty Policy – All students admitted to UF have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others.
16. Accommodation for Students with Disabilities – Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.
17. UF Counseling Services – Resources are available on-campus for students having personal problems or lacking clear career or academic goals. The resources include:
- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
 - SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
 - Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.
18. Software Use – All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.