

## ENGR 591/691 – Design of Experiments

**INSTRUCTOR:** Karla Mossi, Ph.D.  
Assistant Professor  
Mechanical Engineering  
School of Engineering Building, Room 314  
601 West Main Street  
P.O. Box 843015  
Richmond, Virginia 23284-3015  
Ph.: (804) 827-5275  
Fax: (804) 827-7030  
E-mail: [kmmossi@vcu.edu](mailto:kmmossi@vcu.edu)  
**EMAIL:** [kmmossi@vcu.edu](mailto:kmmossi@vcu.edu)

**CLASS MEETING:** TR – 05:30PM – 06:45PM **ROOM :** ENGRB-0252, SoE

### COURSE DESCRIPTION:

**Experimental Methods for Engineering:** *Credits 3.* The class consists of reviewing basic concepts of measurement methods, planning and documenting experiments, and presenting and analyzing experimental data. Data sampling and computerized data acquisition systems and the use of statistical methods and uncertainty analysis applied to data reduction will be presented. An introduction to methods such as six-sigma and factorial experimental design to engineering projects and applications to planning and executing an engineering project will be presented. This course is aimed to provide students with the necessary background to plan, budget, and analyze and experiment or project so that assumptions made in the study are clear and concise. Most of all, the student should be able to insure that the conclusions drawn from experimental work are valid and accurate. Strong emphasis is placed on problem solving, professional judgment, and the importance of accuracy, error, and uncertainty analysis. After completing the course, students are expected to be able to write, plan, budget, and describe expected outcome of a project by using design of experiments theory.

**Internet Site:** There will be an Internet site available for the course, <http://blackboard.vcu.edu>. To login use your e-mail username and password.

### Suggested Text:

Montgomery, Douglas C. Design and Analysis of Experiments (6th Ed.). Wiley, 2001.  
Web site:

[http://jwsedcv.wiley.com/college/bcs/redesign/instructor/chapter/0,12264,047148735X\\_BKS\\_2171\\_15107\\_\\_\\_\\_,00.html](http://jwsedcv.wiley.com/college/bcs/redesign/instructor/chapter/0,12264,047148735X_BKS_2171_15107____,00.html)

### Supplementary Bibliography:

1. Cobb, George W. Introduction to Design and Analysis of Experiments. Key College Publishing, Springer-Verlag, 1998. ISBN 1-931914-07-9.
2. Wheeler, Anthony J., and Ganji, Ahmad R., Introduction to Engineering Experimentation, 2<sup>nd</sup> edition, Prentice Hall. ISBN 0-13-065844-8.
3. Holman, J. P., Experimental Methods for Engineers, 7<sup>th</sup> edition, McGraw Hill. ISBN 007-366-0558.
4. Creveling, C.M, Slutsky, J.L., and Anti, Jr. D., Design for Six Sigma, 1<sup>st</sup> edition, Prentice Hall. ISBN 0-13-0092231

**Method of Evaluation:**

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|---------------------------|-----|
| 1. Class participation    | 20% |
| 2. Assignments/Projects   | 20% |
| 3. Abstract               | 10% |
| 3. Reports/Presentation   | 20% |
| 4. Final Paper -Two parts | 30% |

**Grading Policy:**

93 - 100	= A
85 - 92	= B
77 - 84	= C
70 - 77	= D
Below 70	= F

**Makeup Policy:**

Please make arrangements with the instructor to make-up missed exams. Make-ups must be completed within one week of the scheduled exam. Missed presentations will be given the following week. Makeup exams and reports will receive a 10 pt. reduction in score.

**Honor Code and student conduct:** Students are responsible for being familiar with and adhering to the VCU Honor Code and student conduct policy as outlined in the current *VCU Resource Guide*, available at <http://www.students.vcu.edu/rg>.

**ADA Policy:** Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act of 1990 require VCU to provide academic adjustments or accommodations for students with documented disabilities. Students seeking academic adjustments or accommodations must self-identify with the Coordinator of Services for Students with Disabilities on the appropriate campus. After meeting with the Coordinator, students are encouraged to meet with instructors to discuss their needs and, if applicable, any laboratory safety concerns related to their disabilities. Please refer to the VCU ADA policy in the *VCU Resource Guide*, available at <http://www.students.vcu.edu/org>.