Instructor: Dr. Subrata Kundu, 2140 Pennsylvania Ave, Room 202. kundu@gwu.edu Phone : 994-6355
Office Hours: M, W: 4:00 p.m. – 5:00 p.m. and by appointment.

Course Structure: The class consists of one three hour lecture per week. Your grade is based on homework assignments, one midterm and the final.


Course Content: This graduate level Linear Models course is designed as a one-semester course for graduate students in Statistics. Graduate students from other fields such as Economics, Finance, Sociology, Psychology, Engineering would find this course very useful.

This course concentrates on development of the basic theory for regression, analysis of variance, analysis of covariance and extensions of these such as generalized linear models. This course covers theoretical aspects as well as applied problems in linear models. Topics to be covered include review of matrix algebra, random vectors and matrices, multivariate normal distribution, distribution of quadratic forms, simple and multiple regression: Estimations and Hypothesis testing, Model validation and diagnostics, Analysis of Variance: One way models, Two way models, unbalance data, Analysis of covariance and generalized linear models.

The mathematical prerequisite for this course are calculus and matrix algebra. Statistical prerequisites include some exposure to statistical theory (STAT 201-2).

Learning Outcome: As a result of completing this course students will be able to
i) Comprehend, describe and explain theoretical foundations of linear models.
ii) Read and comprehend new advanced material in the field.
iii) Derive and study appropriate estimators, tests for multiple regression models, analysis of variance models etc.
iv) Apply theoretical techniques to do research and solve new problems in linear models.

Homework and Projects: Homework will be assigned in the lecture every week. There will be one or two assignments involving the use of SAS, Splus or R.

Midterm: One closed–book midterm examinations will be given around March 30th.

Final Exam: The Final examination (Time and Date to be announced) is cumulative. In the event that you are going to miss an examination, you must notify me prior to the examination. Students who miss the final without a valid medical excuse will most likely fail the course. There will be no make-up final.

Course Grading: Your final letter grade will be based on a total score computed as follows:

- Homework 40%
- Midterms 30%
- Final exam 30%

A grade of INCOMPLETE will ONLY be given to a student who is passing the course and cannot complete the course due to illness or other (documented) circumstances beyond their control.

Class Policy: Late work will not be accepted. Except for medical cases (with proper documentation) there will be no make-ups. If you miss an exam or miss a deadline you get zero credit for that part. For university policies on teaching see http://www.gwu.edu/~academic/Teaching/main.htm
**Code of Academic Integrity:** All examinations, papers, and other graded work products and assignments are to be completed in conformance with the **George Washington University Code of Academic Integrity.** It states: “Academic dishonesty is defined as cheating of any kind, including misrepresenting one’s own work, taking credit for the work of others without crediting them and without appropriate authorization, and the fabrication of information.” For the remainder of the code, see: [http://www.gwu.edu/~integrity/code.html](http://www.gwu.edu/~integrity/code.html)

**Student Services:** If you experience difficulty in this course for any reason, please consult with me. If you have a disability and require accommodations, please notify me with a letter from DSS so that we can make arrangements.

**DISABILITY SUPPORT SERVICES (DSS):** Any student who may need an accommodation based on the potential impact of a disability should contact the Disability Support Services office at 202-994-8250 in the Marvin Center, Suite 242, to establish eligibility and to coordinate reasonable accommodations. For additional information please refer to: [http://gwired.gwu.edu/dss/](http://gwired.gwu.edu/dss/)

**UNIVERSITY COUNSELING CENTER (UCC):** The University Counseling Center (UCC, 202-994-5300, [http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupport](http://gwired.gwu.edu/counsel/CounselingServices/AcademicSupport)) offers 24/7 assistance and referral to address students’ personal, social, career, and study skills problems. Services for students include: i) crisis and emergency mental health consultations, ii) confidential assessment, counseling services (individual and small group), and referrals.

**SECURITY:** In the case of an emergency, if at all possible, the class should shelter in place. If the building that the class is in is affected, follow the evacuation procedures for the building. After evacuation, seek shelter at a predetermined rendezvous location. See Blackboard page for more information.

**Other:** Please turn your cell phone ringer off. No eating in the classroom.