Instructor: Professor Hossein Hemati. (hhemati@mail.sdsu.edu)
Time: MWF 10:00am-10:50am
Class room: IT-101
Final Exam: Friday Dec. 13th at 10:30am-12:30pm, based on SDSU final Exam Schedule
Phone: 619-594-6071 Message
Office: E-421J (CCEE Office)
Office Hours: Monday and Wednesday from 9:00am to 10:00 am; other hours available by appointments

Douglas C. Montgomery, George C. Runger, April 2011
ISBN#978-0-470-05304-1
Course Prerequisite: Math 141

Course Objective: Application of statistical methods to Civil, Construction, and Environmental Engineering problems. This course will cover lots of real life practical and statistical problem in Hydrology, Water Quality, Air Pollution, and other related areas such as Transportation, Geotechnical, and Construction Engineering.

Course Outcomes:
This course is one of many that you will take towards your degree in Civil, Construction, and Environmental Engineering. Each of our courses is designed as part of your career development in the Civil, Construction, and Environmental Engineering profession. Program outcomes are intended to provide a broad base of knowledge to found your career. However, each course in the curriculum emphasizes particular aspects of that overall body of knowledge. Although other outcomes may also be addressed, this course is intended to have a particular emphasis on the following program outcomes:

Outcome 1) Solve problems in mathematics through multi-variable calculus, Calculus- based physics, and one additional area of science.
Assessed by: Homework, Midterm and Final Exam
a) Apply mathematics, logarithmic, calculus, and Exponential properties to Solve Statistical problems associated with Civil, Construction, and Environmental Engineering.

b) Calculate Binomials, and Poison Distribution, and predicting future effect.

Outcome 5) Design a civil, construction or environmental experiment to meet a need, conduct the experiment, and analyze the resulting data. Assessed by: Homework

a) Apply test of hypotheses, single, and multi regression analyses for Civil, Construction, and Environment future forecasting.

b) Calculate Mean, Mode, Median, and Standard Deviation Variance for statistical problems.
Outcome 8) Organize and deliver effective verbal, written and graphical communication.
Assessed by: Homework, Case study and Quizzes

a) Determine the statistical result in different type of Data, and have an oral and Graphical class Presentation.
b) Present effective Histogram, written, and Power Point Presentation to the class Projects.

Outcome 9) Apply relevant techniques, skills, and modern engineering tools to solve a simple problem.
Assessed by: Homework, Midterm and Final Exam

a) Calculate statistical problems by using analyses of Variance, p-value, permutation, combination, and joint properties.
b) Apply Z tables, T tables, F tables, and Chi square tables to solve statistical problems related to civil, construction, and environmental engineering.

Grading Criteria

<table>
<thead>
<tr>
<th>Class Participation and Weekly Activity</th>
<th>5%</th>
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<tbody>
<tr>
<td>Homework’s and Case Study</td>
<td>10%</td>
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<tr>
<td>Quizzes</td>
<td>15%</td>
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<tr>
<td>Exam one</td>
<td>20%</td>
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<tr>
<td>Exam two</td>
<td>20%</td>
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<td>Exam three</td>
<td>20%</td>
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<tr>
<td>Final Exam Comprehensive</td>
<td>30%</td>
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<tr>
<td>Total</td>
<td>100%</td>
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Notes:

1) Extra 5% credit tasks (Such research application projects and other Activity…) may be added at the discretion of the instructor

2) Refer to SDSU Main Catalog 2013-2014

Basis of grading:

A ≥ 94%;   A- ≥ 90%
B+ ≥ 87%;  B ≥ 84%;   B- ≥ 80%
C+ ≥77%;   C ≥ 74%;   C- ≥ 70%
D+ ≥ 67%;  D ≥ 64%;   D- ≥ 60%
F < 60%

CIV E 160
Introduction to Statistical Analyses for Civil, Construction, and environmental Syllabus

The Role of Statistics in Engineering
Compute, and Interpret the Sample Mean, Mode, Median, and Range.
Sample Variance, Standard Deviation;
Population Variance, Standard Deviation.
Interpret visual Data Analyses, Stem-and-leaf.
Construct, and Interpret of Normal Probability
Plot, Random Sampling
Probability, sample Spaces, and Tree Diagram
Probability of Joint event, Union, Intersect, and Universe
Discrete Random Variable, Cumulative Probabilities Distributions
Mean and Variance of Discrete Random Variables
Continuous Random Variables and probability Distribution

Review for exam-1
EXAM-1 (Tentatively) Friday September 27, 2013
Return Exam-1
Joint probability Distribution
Conditional probability Distribution
Sampling, Estimation, Approximation
Statistical Intervals for a single Sample
t Distribution and chi-square Distribution
Test of Hypotheses for single Sample
Statistical Hypotheses, one Side, and two Side Hypotheses
P-value in hypotheses tests
Type one, and Type two Errors
Testing for Goodness of fit
Contingency table tests
Tests of the Mean of the Normal Distribution, Variable Unknown

Review for Exam-2.
EXAM-2 (Tentatively) Wednesday October 30, 2013
Return Exam-2
Statistical Inference for Two Samples
Statistical Inference for Two Samples
Statistical Inference for Two Samples
Simple Regression and Correlation
Simple Regression and Correlation
Properties of the least Square Estimators
Confidence Intervals on the Slope, and Intercept
Prediction of new observations

Review for Exam-3
EXAM-3 (Tentatively) Friday November 22, 2013
Return Exam-3
Multi Linear Regression
Hypotheses Tests in Multiple Regressions
Design and Analysis with Single Factor
Design of Experimental with Several Factors
Statistical Quality Control
Quality Improvement, Control Chart, and SPC

Review for Final Exam
Course Policies

- Exercises are assigned to facilitate class discussion and build skills that can only be improved by practice. Thus it is critical that all exercises are completed on the assigned date by the beginning of class. Late homework will not be accepted. Work is unlikely to be successfully completed the night before it is due. Assignments are to be done individually, except as noted. Students may discuss the assignments but not copy solutions. Collaboration is encouraged and will occur, but copied work will receive a grade of zero. Each student is expected to understand and be able to explain their own work. Assignments are graded on the correctness, effort and presentation of the work.

- Homework: will be assigned at end of each class. Weekly homework will be collected on Friday at beginning of class. Student’s name, Class ID #, Course name, Exercises must be presented in a neat on one side (prefer) of paper staple all pages, and professional manner as follows: Problem number and problem statement given before each problem. The problem statement should include the essence of what is given and what is to be determine, not the question as provided to you. Include figures as appropriate. Problem solution presented in a logical, orderly fashion, and sufficient but brief text; clearly explain the procedure used. All calculations shown separately, including units and conversions; and proper number of significant digits.(4Digits)Late homework will not be accepted. I will drop the lowest homework score for each person to allow for some unforeseen situations (illness, car, etc).

Quizzes: There will be quizzes throughout the semester to check your progress. Quizzes will cover material from class and assigned readings in preparation for class. Unannounced quizzes are generally scheduled more frequently. Quizzes may vary in duration, and additional work may take place in class either before or after. You should come to class prepared with everything you need. There will be no makeup quizzes. I will Drop the lowest quiz score for each person to allow for bad days, such as illness, car problems...

Midterm Exams: There will be three midterms during the semester to check your progress. It is the student’s responsibility to obtain information about scheduled exams and arrange to be present. There will be no makeup exams. ; I will Drop the lowest score one of Three Exams for each person.

Final Exam: The final exam will be mandatory and comprehensive. You will be responsible for everything in the readings, lectures, class notes, exercises, handouts, exams, in class exercises, or other related documents.

In Class: You will have a number of opportunities to work together on the material in class. I expect you to participate as I will ask you to share what you’ve discussed. Failure to actively participate will impact your grade. Professional and courteous behavior in all interactions with the professor and fellow students is expected. Cell phones should be turned off during class. Please be on time to the class.

Blackboard: I will make use of blackboard as a means of communicating with you, posting your grades for exams, exercises, and projects will be posted on blackboard. However, your total earned points divided by the total possible points is not reflective of your current grade in the class, given: 1) some grades may be dropped; 2) extra credit is possible; and 3) exercises, projects, and exams carry different weights. A formula or spreadsheet for calculating your progress will be posted on blackboard midway through the semester and updated as each item is graded. You are responsible for tracking your progress in the class.

University Sanctioned Activities: Some students may participate in university sponsored activities (such as intercollegiate athletics or student government) which may require them to miss class. These students will be given the chance to make up graded work they miss as a result of travel. This right will be granted ONLY if all of the following conditions are met.

1. Students participating in University-sanctioned activities need to identify themselves prior to missing class.
2. Students must provide a copy of their travel schedule indicating the SDSU organization sponsor or on letterhead of the sponsor.

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3. Missed work will be rescheduled at a convenient time on a case-by-case basis. In general, the student should expect to make up quizzes very shortly before their departure.

**Support Resources:**
1. If you need additional helps or attention due to your requirements and needs please ask the Professor first day of the class.
2. Students may purchase other supports materials but not required and SDSU or Professor Hemati will not provide or Support any software outside of the main labs
3. Touring available, Contact Student Services
4. Contacting me always welcome E-mail inquiries will be reply whitens 48 hours on Mon, Wed, and Friday.
5. December 11 Last day of classes before final examinations.
6. **Final Exam: Friday Dec. 13th at 10:30am-12:30pm**, based on SDSU final Exam Schedule

*This Syllabus subject to change at the instructor’s discretion*