NORTHERN ARIZONA UNIVERSITY
College of Engineering, Forestry & Natural Sciences

Department of Mathematics & Statistics | 172 Adel Mathematics Bldg | 928-523-6873
Roy St. Laurent, Ph.D. | http://jan.ucc.nau.edu/~rts | Roy.St.Laurent@nau.edu

STA 275: STATISTICAL ANALYSIS – FALL 2008
10:20-11:10 am MWF – Section 1 – class # 6622 – AMB 225

INSTRUCTOR INFORMATION
Instructor: Dr. Roy St. Laurent **Office:** AMB 172 **Course webpage:** http://vista.nau.edu/
Office Hours: M 11:10am-12pm & 2-3pm; WThF 11:10am-12:pm; or by appointment

Prerequisite: A grade of *C* or better in MAT 131 (Brief Calculus) or MAT 137 (Calculus II).

Course Description: STA 275 is a three credit hour course that meets 150 minutes each week. The course is a calculus-based introduction to applied statistics. Topics covered include: descriptive statistics; discrete and continuous random variables; probability distributions including binomial, Poisson, normal and *t* distributions; one- and two-sample hypothesis tests and confidence intervals; simple linear regression and correlation. Note that credit cannot be earned in both this course and in STA 270 (Applied Statistics).

Statistics is the discipline that seeks to quantify uncertainty in decision-making via data collection and analysis. As such, statistics is the cornerstone of much of scientific inquiry. This course will focus on the use of data to draw conclusions in the face of uncertainty, particularly in science and engineering applications.

Required Text and Coverage: *Statistics for the Sciences*, by Buntinas & Funk, Brooks/Cole, 2005, material from chapters 1 through 15. If time permits, we may cover chapter 16.

Course Outline: The table below gives an ***approximate*** timeline for the material to be covered in the course. Reading assignments for each chapter will be made in class and posted to the course website.

Dates	Topic	Text Material
25 August – 15 September	Descriptive Statistics & Introduction to Probability	Chapters 1 through 3
19 September	Exam One	
17 September – 24 October	Discrete & Continuous Random Variables	Chapters 4 through 9
31 October	Exam Two	
27 October – 21 November	Sampling Distributions, Hypothesis Testing & Confidence Intervals	Chapters 10 though 13
26 November	Exam Three	
24 November – 5 December	Two Sample Inference & Regression	Chapters 14 and 15
8 December, 10am-noon	Comprehensive Final Exam	

Course Structure: The class will use a lecture-discussion format; discussion in the sense that students will frequently be invited to contribute to the development of the material and examples. At times, students may work on in-class activities either individually or in small groups. Homework will be regularly assigned and on occasion make use of the statistical software JMP.

Student Learning Outcomes: Upon successful completion of this course you will be able to:
1. Understand and explain simple statistical methods commonly used in scientific research studies using correct statistical notation and appropriate language.
2. Construct informative graphical and numerical summaries of data appropriate for the type of data and the context in which the data was collected, and interpret these summaries in written terms, in context.

3. Understand the concept of a random variable; recognize standard probability distributions and be able to calculate probabilities for such random variables.
4. Understand the formalism of parameter estimation and hypothesis testing and how it relates to, supports, and advances the scientific method.
5. Recognize and properly apply the formalism of parameter estimation and hypothesis testing to scientific inquiry by appropriate statistical analysis of collected data both by hand and with the aid of statistical software.
6. Understand the limits of the statistical methodology learned in the course, and be able to recognize problems for which the statistical methods learned are not appropriate.

Assessment and Grades: Your course grade will be determined by a weighted average of homework scores and scores on exams as follows:

- Homework assignments (collected weekly) 15%
- In-class exam 1 (Friday, 19 September) 20%
- In-class exam 2 (Friday, 31 October) 20%
- In-class exam 3 (Wednesday, 26 November) 20%
- Comprehensive Final (10:00am-12:00pm Monday, 8 December) 25%

Grade Policy: Course grades will be based on percentage of points earned as follows: *A* ≥90%; *B* 80-89%; *C* 70-79%; *D* 60-69%; *F* ≤59%. The instructor reserves the right to lower grade cutoffs.

Attendance: Attendance is expected at all class sessions. Normally no provisions will be made for missed work. Your class participation is important and you are expected to contribute to a positive classroom learning environment.

Homework: Completing homework (including calculations, writing, and interpreting results) is an integral part to learning statistics. Homework assignments will be posted to the course website (login at http://vista.nau.edu/) and announced in class. Homework should be neatly prepared and handed in on time. Late homework will not be accepted. Homework may include group work and in-class activities.

Exam Format: Hourly exams and the final exam are in-class, closed-book exams. For each exam you may use one page (8.5"×11") of formulas prepared by you and handed in with your exam.

Exam Policies: The final examination will be given at the time scheduled by the university, as listed above. Make a note of all exam dates now as there will be **no exceptions** from taking an exam at the scheduled time, except as stipulated by university policy and approved by the instructor (e.g., institutional excuses). In particular, any travel plans for the end of the semester shall not conflict with the final examination date. Cell phones, mp3 players, and other electronic devices, other than a calculator, are prohibited during exams.

Calculator: A scientific calculator will be needed to complete homework and for use in examinations. Several excellent choices are the TI-83, 83-Plus, or TI-84.

Technology: As part of the course we will be using web-based tools and the statistical software JMP, available in the computer lab in AMB 222 and across campus. Some homework assignments will require that you use these tools. One or more class periods will be spent in the computer lab and handouts will be provided.

Changes to the Syllabus: The instructor reserves the right to make changes in the syllabus as needed, including changes in exam dates. Such changes will be announced in class and posted to the course website.

Other Policies: Plagiarism, cheating, and other forms of misconduct are prohibited and subject to the Arizona Board of Regents Code of Conduct and the procedures outline in the NAU Student Handbook Section 5-308 and Appendix G. You are responsible for the being familiar with these policies and the general University and Department of Mathematics & Statistics policies attached to this syllabus.

NORTHERN ARIZONA UNIVERSITY
DEPARTMENT OF MATHEMATICS & STATISTICS
UNIVERSITY AND DEPARTMENT POLICIES – FALL 2008

Course Prerequisites and Placement: Prior to enrollment in a course in the Department of Mathematics & Statistics a student must have completed the course prerequisites or have proper placement for the course. It is the students' responsibility to check that they are properly enrolled in a course and to drop the course if they are not. Failure to do so could result in not receiving credit for the course. The department may cancel students' registration in a course in which they are not properly enrolled. However, it is the student's responsibility to monitor their own enrollment.

Administrative Drops: An instructor may administratively drop from a course any student who does not attend the first two class meetings. Students who have not met all prerequisites for a course may be administratively dropped. However, it is the student's responsibility to monitor their own enrollment.

Class Attendance: Students are expected to assume full responsibility for class attendance and are accountable for work missed because of absences. Instructors are under no obligation to make special arrangements for students who have been absent unless such absence has been excused by a formal institutional excuse. Institutional excuses permit a student to be absent from classes to represent the University in athletics and extracurricular or academic activities. Institutional excuses must be hand-delivered to the instructor and arrangements made for the work missed prior to the planned absence from class.

Dropping/Auditing a Course: The last day you may drop a course (and receive a **W)** is **October 24, 2008.** Academic policy requires that a student who never attended class or stopped attending class receive an **F** should the student fail to officially drop the course. The deadline to change from credit to audit or vice versa is **September 5, 2008**. Once a student has registered and completed a class as an auditor, the audit grade cannot be changed to a credit-earning grade. The grade of **AU** is awarded to auditors for satisfactory attendance. See the most recent *Undergraduate Catalog* for more information at http://www4.nau.edu/academiccatalog/2008/academiccatalog.htm.

The Grade of Incomplete: A grade of **I** is given by an instructor only if a student is unable to finish a course due to extraordinary, unforeseeable circumstances, and the deadline to drop has passed. An incomplete is only given to a student who was passing the course with a grade of **C** or higher at the time the student was forced to stop attending. Before a grade of **I** can be given the student and instructor must complete the official department form indicating the work to be completed, as well as the date(s) by which the work must be completed. A grade of **I** not removed within a one-year period automatically reverts to a grade of **F**.

End of Semester Week: The Department of Mathematics & Statistics has been granted exemption from the University End of Term Week policy and has explicit university approval to schedule tests during End of Term Week.

Final Examinations: Final examinations are required in all classes and must be given at the scheduled times and dates indicated in the university final exam schedule http://home.nau.edu/registrar/final_exam_1087.asp. An exception to the official Final Examination Schedule can be made if a student is scheduled to take more than two examinations in one day. See http://home.nau.edu/registrar/final_exam_1087.asp for more information.

Other University Policies
Students are responsible for learning about the following policies: Safe Environment, Students with Disabilities, Institutional Review Board, Academic Integrity, Academic Contact Hour, and Sensitive Course Materials. A copy of these policies may be downloaded from the web site http://jan.ucc.nau.edu/academicadmin/UCCPolicy/plcystmt.html.

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