DEPARTMENT of MATHEMATICS & STATISTICS
SYLLABUS and COURSE INFORMATION – FALL 2006

STA 473C – INTRODUCTION TO MATHEMATICAL STATISTICS I
10:20-11:10am MWF – AMB 164 – class # 3721

INSTRUCTOR INFORMATION

Instructor: Dr. Roy St. Laurent **e-mail:** Roy.St.Laurent@nau.edu
Office: AMB 172 **webpage:** jan.ucc.nau.edu/~rts/473/main.html
Phone: 523-6873

Office Hours: MWF 11:15am-12:15pm; and MT 3:00-4:00pm; or by appointment

COURSE DESCRIPTION

Required Text: *Mathematical Statistics with Applications*, 6th edition, by D.D. Wackerly, W. Mendenhall III and R.L. Scheaffer, Duxbury, 2002. Material will be taken from chapters 1 to 7.

Prerequisites: A grade of *C* or better in MAT 137 Calculus II. While not a formal prerequisite, MAT 238 Calculus III (multivariable calculus) is also recommended as at least a corequisite.

Catalog Description: Elementary combinatorial probability theory, random variables, probability distributions, and moments.

Goals: STA 473C has two overarching goals: to introduce and develop the field of probability (the area of mathematics devoted to the study of randomness); and (thereby) to lay the foundation for the study of statistical inference (the mathematical methods involved in using a sample to draw conclusions about an underlying population) in STA 474C.

Objectives: Upon successful completion of this course you will be able to:

1. Recognize certain important probability models.
2. Use the language and techniques of mathematics to solve probability problems.
3. Continue the mathematical study of probability and statistics in STA 474C.

Course Content:

1. Probability Models
    A. Elementary and combinatorial methods
    B. Discrete and continuous probability spaces
    C. Conditional probability and independence
2. Random Variables
    A. Probability density functions
    B. Cumulative, conditional, and multivariate distributions
    C. Independent random variables
    D. Functions of random variables
    E. Expectation and moments
    F. Moment generating functions
    G. Limit Theorems
3. Families of Distributions
    A. Discrete distributions (e.g., binomial, geometric, Poisson)
    B. Continuous distributions (e.g., normal, gamma, beta, exponential)

COURSE EVALUATION

Basis for Evaluation:

- Homework assignments 20%
- Three "mid-term" examinations 20% each
- Comprehensive final examination 20%

Grade Policy: Cutoffs for course grades will be no higher than *A* ≥90%; *B* 80-89%; *C* 70-79%; *D* 50-69%; *F* ≤49%.

Examination Dates: Exams are (***tentatively***) scheduled for Friday September 29th, Wednesday November 1st, and Friday December 1st.

Final Examination: The final examination will be given at the time scheduled by the University: Monday, December 11th, 10:00am until noon.

COURSE POLICIES

Attendance: Attendance is expected at all class sessions.

Homework: Assignments will be made regularly. Homework should be prepared neatly and handed in at the start of the class period as indicated by your instructor.

Makeup: Make-up exams are usually not given unless an institutional excuse has been presented in advance.

Exams: All examinations are in-class and closed-book format. In advance of each exam, you will be given a sheet of formulas that you may use during the exam. The instructor reserves the right to prohibit all electronic devices (e.g., cell phones, iPods) from the classroom during exams.

Calculator: Occasionally, a basic scientific calculator will be needed in completing homework and on exams. The TI-83 with built-in statistical functions is recommended but not required.

Other Policies: You are responsible for the general policies of the university and the Department of Mathematics & Statistics attached to this syllabus.