

FAYETTEVILLE STATE UNIVERSITY
College of Arts and Sciences
Department of Mathematics and Computer Science
STAT 561 Probability Theory
Fall Semester 2010

I. Locator Information:

Instructor: **Dr. Kwami Tuprah**

Course # and Name **Stat 561: Probability Theory**

Semester Credit Hours: **3**

Office Location: **SBE 307B**

Office hours:

TR 4:00 - 6:00

M 2- 4

Or **by appointment**

Day, Time and Room Class Meets **T R 7:30 – 8: 45pm SBE 109**

Total Contact Hours for Class:

Office Phone: **910 672 1667**

Email address: ktuprah@uncfsu.edu

FSU Policy on Electronic Mail: Fayetteville State University provides to each student, free of charge, an electronic mail account (username@uncfsu.edu) that is easily accessible via the Internet. The university has established FSU email as the primary mode of correspondence between university officials and enrolled students. Inquiries and requests from students pertaining to academic records, grades, bills, financial aid, and other matters of a confidential nature must be submitted via FSU email. Inquiries or requests from personal email accounts are not assured a response. The university maintains open-use computer laboratories throughout the campus that can be used to access electronic mail.

Rules and regulations governing the use of FSU email may be found at
<http://www.uncfsu.edu/PDFs/EmailPolicyFinal.pdf>

II. COURSE DESCRIPTION:

A course including such topics as probability distributions, limit theorems, special functions, and probability models. **PREREQUISITE:** STAT 301, or consent of instructor

III. DISABLED STUDENT SERVICES:

In accordance with Section 504 of the 1973 Rehabilitation Act and the Americans with Disabilities Act (ACA) of 1990, if you have a disability or think you have a disability to please contact the Center for Personal Development in the Spaulding Building, Room 155 (1st Floor); Tel: 910-672-1203.

IV. TEXTBOOK:

Casella, G., and Berger, R. L., (2002), Statistical Inference, Duxbury, Pacific Grove, CA

V. STUDENT LEARNING OUTCOMES:

Upon completion of this course, students will be able to:

Demonstrate the ability to use the properties of set theory,

Solve simple probability problems and demonstrate a practical knowledge of probability theory and its applications.

Additionally, students would be able to apply probability theory to solve real life problems.

VI. EVALUATION CRITERIA:

The grading scale for determining the course grade is given below. The weights given to various activities for evaluation are also given below.

Notebook	10 points
Homework	20points
One Written and Oral Critique	20points
Midterm Examination	25points
Final Examination	25 points

A = 90 - 100%

B = 80 - 89%

C = 70 - 79%

F = below 70

With the consent and approval of the instructor, each student is to gain access to a master's thesis or doctoral dissertation in pure mathematics, applied mathematics, probability theory, or statistics for review and critique. The student is to read the entire thesis or dissertation write and present an oral critique to the class. In the presentation of the critique, the student should pay particular attention to the Statement of the Problem, Literature Review, Methods and Procedures, Results or Findings, and Conclusions and Recommendations.

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VIII COURSE OUTLINE:

Chapter 1	Probability Theory Set Theory Probability Theory Conditional Probability and Independence Random Variables Distribution Functions Density and Mass Functions
Chapter 2	Transformations and Expectations Distribution of Functions of a Random Variable Expected Value Moments and Moment Generating Functions
Chapter 3	Common Families of Distributions Discrete Distributions Continuous Distributions Exponential Families
Chapter 4	Multiple Random Variables Joint and Marginal Distributions Continuous Distributions and Independence Bivariate Transformations Covariance and Correlation

REVIEW FOR FINAL EXAMINATION

THIS OUTLINE MAY BE CHANGED FOR THE OPTIMUM BENEFIT OF THE CLASS

VIII. COURSE REQUIREMENTS:

1. Pre-requisite: STAT 301, or equivalent.
2. The student is expected to pre-study each lesson in advance. The student is expected to complete all assignments and to spend adequate time on class work to insure that the course outcomes are met. At least two hours of home study is expected for each class hour. All tests will be announced prior to their administration.
3. It is the responsibility of the student to avail himself/herself at all class meetings, and obtain individual help from the instructor. It is advisable to consult the University Catalogue on absence from classes.
4. Each student is responsible for maintaining a notebook of problems, selected by the instructor. Students are encouraged to include as many additional problems as possible.
5. Students are expected to enter the classroom on time and remain until the class ends. Late arrivals and early departures without appropriate excuses will not be tolerated.
6. Each student is encouraged to participate in class discussions for a clearer understanding and meet with the instructor when additional assistance is needed.
7. All class discussions should be done in a soberly, orderly, and respectful manner.

IX TEACHING STRATEGIES

STAT 561 is a lecture-based course designed to present the basic theories of probability. Each lecture will contain a summary of the most important concepts from each chapter. Questions, tests, and examination will be posed to class to assess and evaluate their level of comprehension of concepts.

X BIBLIOGRAPHY

Billingsley, P., (1986), Probability and Measure, Wiley-Interscience, John Wiley and Sons, New York, NY

Cramer, Harold. (1946), Mathematical Statistics, Princeton University Press, Princeton, NJ

Dudewicz, J. E, and Mishra, S. N (1988), Modern Mathematical Statistics, John Wiley & Sons, New York, NY

Feller, W., Vols. I & II (1971), Introduction to Probability Theory and Applications, John Wiley & Sons, New York, NY

Hoel, P. G., Port, S. C., Stone, C. J., (1971), Introduction to Probability Theory, Houghton Mifflin Co., Boston, MA

Mood, A. M., Graybill, F. A., and Boes, D. C., (1974) Introduction to the Theory of Statistics, McGraw-Hill Book Co., New York, NY