

RECORD OF THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Department of Statistics



1989-1991 Issue



Although the publisher of this bulletin has made every reasonable effort to attain factual accuracy herein, no responsibility is assumed for editorial, clerical, or printing errors or error occasioned by mistakes. The publisher has attempted to present information which, at the time of preparation for printing, most accurately describes the course offerings, faculty listings, policies, procedures, regulations, and requirements of the University. However, it does not establish contractual relationships. The University reserves the right to alter or change any statement contained herein without prior notice.

Statement on Equal Educational Opportunity

The University of North Carolina at Chapel Hill is committed to equality of educational opportunity and does not discriminate against applicants, students, or employees based on race, color, national origin, religion, sex, age, or handicap. Any complaints alleging failure of this institution to follow this policy should be brought to the attention of the Assistant to the Chancellor. Moreover, The University of North Carolina at Chapel Hill is open to people of all races and actively seeks to promote racial integration by recruiting and enrolling a larger number of black students.

Published by
THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
Chapel Hill, NC 27599

*Issued 16 times a year as follows: 1 in August, 2 in December, 3 in January, 2 in February,
3 in March, 3 in April, 1 in May, and 1 in June*

Send All Undeliverable Copies and Changes of Address to Department of Statistics,
The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599-3260

RECORD OF
THE UNIVERSITY OF NORTH CAROLINA
AT CHAPEL HILL

August 1989

Number 1023

**DEPARTMENT OF
STATISTICS**

Graduate Study

**The University of North Carolina
at Chapel Hill**

MISSION STATEMENT

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

The University of North Carolina at Chapel Hill has been built by the people of the State and has existed for two centuries as the nation's first state university. Through its excellent undergraduate programs, it has provided higher education to ten generations of students, many of whom have become leaders of the state and the nation. Since the nineteenth century, it has offered distinguished graduate and professional programs.

The University is a research university. Fundamental to this designation is a faculty actively involved in research, scholarship, and creative work, whose teaching is transformed by discovery and whose service is informed by current knowledge.

The mission of the University is to serve all the people of the State, and indeed the nation, as a center for scholarship and creative endeavor. The University exists to expand the body of knowledge; to teach students at all levels in an environment of research, free inquiry, and personal responsibility; to improve the condition of human life through service and publication; and to enrich our culture.

To fulfill this mission, the University must:

acquire, discover, preserve, synthesize, and transmit knowledge;

provide high quality undergraduate instruction to students within a community engaged in original inquiry and creative expression, while committed to intellectual freedom, to personal integrity and justice, and to those values that foster enlightened leadership for the state and the nation;

provide graduate and professional programs of national distinction at the doctoral and other advanced levels to future generations of research scholars, educators, professionals, and informed citizens;

extend knowledge-based services and other resources of the University to the citizens of North Carolina and their institutions to enhance the quality of life for all people in the state; and

address, as appropriate, regional, national, and international needs.

This mission imposes special responsibilities upon the faculty, students, staff, administration, trustees, and other governance structures and constituencies of the University in their service and decision-making on behalf of the University.

OFFICERS OF ADMINISTRATION

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

Paul Hardin, J.D., *Chancellor*

Susan Haughton Ehringhaus, J.D., *Assistant to the Chancellor and Senior University Counsel*

Douglass Hunt, LL.B., *Special Assistant to the Chancellor*

David D. Dill, Ph.D., *Assistant to the Chancellor for Planning*

Robert Joseph Cannon, Ph.D., *Affirmative Action Officer*

Donald Arthur Boulton, Ed.D., *Vice-Chancellor and Dean of Student Affairs*

Gary A. Evans, B.A., *Vice-Chancellor for Development and University Relations*

H. Garland Hershey, Jr., D.D.S., M.S., *Vice-Provost and Vice-Chancellor, Health Affairs*

John Dennis O'Connor, Ph.D., *Provost and Vice-Chancellor for Academic Affairs*

John Douglas Swofford, M.Ed., *Director of Athletics*

Harold Gene Wallace, M.Div., *Vice-Chancellor, University Affairs*

Ben J. Tuchi, Ph.D., *Vice-Chancellor, Business and Finance*

INTRODUCTION

The University of North Carolina at Chapel Hill is one of the leading graduate research universities in the United States. Of the current total enrollment of about 22,800 students, more than a quarter are in graduate programs. Its 474-acre campus lies in the town of Chapel Hill in the Research Triangle area, near the cities of Durham and Raleigh, which are homes for Duke University, and North Carolina State University. The Research Triangle Park is central to these cities and on 6,200 acres houses some 46 major research organizations. Chapel Hill, a cosmopolitan town of about 36,000, blends a mild climate, relaxed atmosphere, and abundant cultural and recreational opportunities.

This catalog briefly describes the graduate programs offered by the Department of Statistics. The material contained here is a supplement to that found in the Graduate School Catalog of the University; some of the regulations of the Graduate School as well as information on housing, student health services, etc., have been omitted here. Requests for a Graduate School Catalog should be sent to:

Graduate School

The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599-4010.

THE DEPARTMENT OF STATISTICS

The Department of Statistics was organized in 1946, with Harold Hotelling as its first chairman. Since 1948, over 185 Ph.D. degrees in Statistics have been awarded. Holders of these degrees have assumed positions of responsibility in many important statistical organizations, and as chairs of several Departments of Statistics both here and abroad. Many professors at leading universities, and senior statisticians in government and industry received their doctoral training in the Department of Statistics at Chapel Hill.

Much fundamental work in experimental design, coding theory, nonparametric inference, estimation and hypothesis testing, sequential analysis, renewal theory, and stochastic processes has originated here. Together with the Department of Biostatistics at Chapel Hill and the Department of Statistics in Raleigh, the department publishes the Institute of Statistics Mimeo Series, which now includes over 1,750 titles, and contains the first results of many of the fundamental lines of research in mathematical statistics as it exists today. Also housed in the Department is the Center for Stochastic Processes, whose members include three of the Department's faculty and a number of visiting scholars each year. The Center's Technical Report Series now numbers over 250 titles.

The Department has close connections with various other centers of statistical activity in the area. The Department of Biostatistics at Chapel Hill offers a wide range of courses in applied statistics which may be combined with the more theoretically oriented courses in the Department of Statistics to suit individual needs and interests. The departments of Mathematics, Operations Research, Computer Science, and Economics, and the Psychometric Laboratory and the Institute for Research in Social Sciences, among others within the University, and the Department of Statistics at Raleigh and the Institute of Decision Science at Duke provide opportunities for further training in areas related to statistics. In addition, various statistical research groups in the Research Triangle Park, including the Research Triangle Institute, the Microelectronic Center of North Carolina (which houses the State's Cray super computer), the Environmental Protection Agency, the Biometry Section of the National Institutes of Environmental Health Sciences, and private businesses, such as SAS, Glaxo, and Burroughs Wellcome afford opportunities for scholarly work and summer employment.

The Department is located in Phillips Hall, together with the departments of Mathematics and Physics and the Academic Computing Center. All graduate students are provided with offices, which are shared with one or two fellow students. The department has microcomputers as well as terminals connected to the University's mainframe computer for student use. The Brauer Library, which serves the departments of Computer Science, Mathematics, Operations Research, Physics and Statistics, is also located in Phillips Hall and maintains a collection of approximately 77,000 volumes, microfiche, technical reports, and over 950 current journal subscriptions.

The Statistics Colloquium Series meets on alternate weeks throughout the academic year, and provides a forum for the presentation and discussion of recent developments and new ideas by faculty and visiting scholars. The Hotelling Lectures, an annual one-week event, features three talks by an eminent guest speaker. The Center for Stochastic Processes also maintains an active research seminar series throughout the year.

Employment Opportunities

Statistics graduates have found many career opportunities in what continues to be a very stable job market. A variety of positions are available and our graduates have been successful in finding jobs suited to their individual interests and talents. Of the 22 most recent Ph.D. graduates, 15 have taken positions in academia, and 7 in business and industry. The pharmaceutical industry has recently attracted a number of both Ph.D., and M.S. graduates. Students in our graduate programs receive assistance with placement. The faculty, through their many professional contacts, are able to help students identify appropriate positions. The Chairman is often contacted by various academic, industrial, and governmental organizations with job openings. Also, the University maintains an Office of Career Planning and Placement which is available to all prospective graduates.

The Department of Biostatistics

The Department of Biostatistics is in the School of Public Health. It offers the M.S. and Ph.D. degrees, and Statistics degree candidates often elect a minor or supporting program in Biostatistics. The Departments of Statistics and Biostatistics maintain close ties: the Biostatistics chairman, Professor B. Margolin, is an Adjunct Professor in Statistics, and Biostatistics Cary C. Boshamer Professor P. K. Sen holds a joint appointment in the Statistics Department. The Biostatistics Department offers a variety of applied courses of interest to our graduate students on topics such as categorical data, clinical trials, demography, sample survey methodology, statistics in epidemiology and environmental science, etc. For further information on this program, write to:

The Registrar
Department of Biostatistics
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-7400.

The Department of Operations Research

The Department of Operations Research offers the M.S. and Ph.D. degrees. Statistics students may elect a minor or supporting program in Operations Research. The study of Operations Research involves the application of diverse topics in mathematics and statistics to problems of resource allocation. Specialization is possible in theoretical areas (for example, mathematical programming, stochastic processes) or through specific applications (such as urban and environmental systems, population studies, biological sciences). For further information, write to:

Admission Chairman
Department of Operations Research
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3180.

PH.D. PROGRAM

Students planning a career in teaching or research should work for the degree of Doctor of Philosophy. This requires at least three, but more usually, four to five years of full-time graduate work, predicated upon substantial undergraduate mathematical preparation. Research is an important part of the work of doctoral candidates. The philosophy of the department is that its Ph.D. graduates should be broadly based in statistical theory and practice, and at the same time be able to conduct basic research in some special area of mathematical statistics.

Ph.D. coursework requires eighteen courses of three credit hours each: eight first-year courses, seven advanced courses, and three courses forming a "supporting program," two of which must be from outside the Department of Statistics. It is possible for some of these course requirements to be waived, but only on the grounds of prior knowledge and demonstrated competence of the subject material, and with the approval of the Curriculum Committee. All Ph.D. students are required to register for at least three semester hours of dissertation registration 394.

The first-year courses are listed below. They are designed to provide a broad base in probability and statistical theory and practice.

FIRST-YEAR COURSES**Fall:**

- Stat 105, *Elements of Statistical Analysis*
- Stat 112, *Measure and Integration*
- Stat 129, *Introduction to Stochastic Processes*
- Stat 134, *Intermediate Statistical Theory I*

Spring:

- Stat 132, *Intermediate Probability*
- Stat 133, *Introduction to Time Series Analysis*
- Stat 135, *Intermediate Statistical Theory II*
- Stat 150, *Analysis of Variance with Application to Experimental Designs*

In the second and later years a student takes seven advanced courses in at least three of five areas of specialization listed below. At least two areas must be represented by two or more courses each. Typically four courses are taken in the student's major area, two are in another area, and the seventh course is in a third area.

Following are lists of typical advanced courses in the five areas. Other courses may be added in various areas with approval of the Curriculum Committee.

ADVANCED AND SPECIALIZED COURSES (by area):**Inference:**

- Stat 220, *Estimation, Hypothesis Testing, and Statistical Decision*
- Stat 221, *Sequential Analysis*
- Stat 222, *Nonparametric Inference: Rank-Based Methods*
- Stat 223, *Nonparametric Inference: Smoothing Methods*
- Stat 224, *Statistical Large Sample Theory*
- Stat 225, *Subsampling Techniques*
- Stat 111, *Methods of Mathematical Statistics*

Probability and Stochastic Processes:

- Stat 231, *Advanced Probability*
- Stat 232, *Stochastic Processes*
- Stat 233, *Time Series Analysis*
- Stat 234, *Extreme Value Theory*
- Stat 235, *Point Processes*
- Stat 236, *Stochastic Analysis*
- Stat 242, *Probability in Linear Spaces*
- Stat 280, *Advanced Stochastic Methods of Operations Research*
- Stat 111, *Methods of Mathematical Statistics*

Design of Experiments

- Stat 210, *Design and Analysis of Experiments*
- Stat 211, *Special Topics in the Design of Experiments*
- Stat 212, *Combinatorial Problems of the Design of Experiments*
- Stat 253, *Error Correcting Codes*

Multivariate Analysis

- Stat 260, *Multivariate Analysis*
- Stat 261, *Advanced Parametric Multivariate Analysis*
- Stat 262, *Nonparametric Multivariate Analysis*

Communication Theory

- Stat 140, *Linear Systems*
- Stat 142, *Introduction to Estimation and Detection Theory*
- Stat 232, *Stochastic Processes*
- Stat 242, *Probability in Linear Spaces*
- Stat 245, *Advanced Topics in Statistical Communication Theory*
- Stat 252, *Information Theory*
- Stat 253, *Error Correcting Codes*
- Stat 111, *Methods of Mathematical Statistics*

Applied Statistics Courses:

- Stat 200, *Applied Multivariate Analysis II*
- Stat 205, *Statistical Quality Improvement*

EXAMINATIONS

Doctoral students must first pass the basic *Written Examinations* which cover the material in the first-year courses. These consist of three parts, each four hours in length, and are normally taken early in the fall semester of the second year.

Students are expected to complete the *Preliminary Oral Examination* no later than the end of the sixth semester. This is based on an essay including a description of the proposed dissertation topic, a review of the literature, and a bibliography related to the proposed research. At this examination, the student will describe the thesis proposal and answer questions on it, and on the literature reviewed. A Ph.D. student who has passed this oral examination and who wishes to obtain an M.S. degree may do so without having to take the final oral examination normally required for the M.S.

When ready, the candidate will submit the dissertation to the members of his/her committee. At the *Final Oral Examination*, the candidate presents the dissertation research and conclusions, and answers questions on these.

RECENT DISSERTATIONS

The following list is a representative sample of recent dissertation titles:

- “Studies in multinomial mixture models”
- “Estimation of continuous time Markov processes in a finitely additive white noise model”
- “Point processes associated with extreme value theory”
- “The algebra of a multistratum design and the application of its structure to analysis”
- “Variance function estimation in heteroscedastic regression models”
- “Bayes sequential testing: A direct and analytic approach”
- “Asymptotic optimality and distribution theory of nonparametric tests for restricted alternatives”
- “A study of Lebesgue decomposition of measures induced by stable processes”
- “A clinical trials model for determining the best of three treatments having Bernoulli responses”
- “Capacity of Gaussian channels with jamming”
- “Improved estimation in some nonregular situations.”

M.S. PROGRAM

Though the M.S. program is small, the Department provides a wide variety of courses leading to the Master's degree. The basic philosophy is that this program should provide a broad training in statistical theory and practice, with the student being able to specialize in either applied or theoretical areas. Students who have completed the Master's program have had little difficulty in finding jobs in industry or government; many have found the M.S. in Statistics a beneficial adjunct to a Ph.D. degree in another field of study.

The M.S. degree requires satisfactory completion of 30 semester hours of coursework. There are two options: “Applied Statistics” and “Mathematical Statistics.” Each consists of a core of required courses, broadening courses in statistics, and two courses to be taken outside the Department. Four semesters are regarded as normal time for the completion of all requirements for the Master's degree.

I. APPLIED STATISTICS OPTION

The required courses are:

Track 1.

- (Stat 126, *Introduction to Probability* is a prerequisite)
- Stat 104 (Bios 164), *Sample Survey Methodology*
- Stat 105, *Elements of Statistical Analysis*

Stat 127, *Mathematical Statistics*
Stat 129, *Introduction to Stochastic Processes*
Stat 133, *Introduction to Time Series Analysis*
Stat 160 (Bios 166), *Applied Multivariate Analysis I*

Track 2.

Stat 104 (Bios 164), *Sample Survey Methodology*
Stat 105, *Elements of Statistical Analysis*
Stat 133, *Introduction to Time Series Analysis*
Stat 134, *Intermediate Statistical Theory I*
Stat 135, *Intermediate Statistical Theory II*
Stat 160 (Bios 166), *Applied Multivariate Analysis I*

The student will also be required to take two broadening courses in statistics which may be selected from:

Stat 107 (Math 162), *Actuarial Math II*
Stat 129, *Introduction to Stochastic Processes*
Stat 150, *Analysis of Variance with Application to Experimental Designs*
Stat 210, *Design and Analysis of Experiments*
Stat 260, *Multivariate Analysis*

Other courses may be substituted with the permission of the Curriculum Committee.

II. MATHEMATICAL STATISTICS OPTION

The required courses are:

Stat 105, *Elements of Statistical Analysis*
Stat 129, *Introduction to Stochastic Processes*
Stat 134, *Intermediate Statistical Theory I*
Stat 135, *Intermediate Statistical Theory II*
Stat 150, *Analysis of Variance with Application to Experimental Designs*.

The broadening course work consists of three additional courses in statistics chosen from either the list of broadening courses in the Applied Statistics option or:

112, 132 only as a sequence,
140, 142 only as a sequence,
any 200-level statistics course,
other courses approved by the Curriculum Committee.

EXAMINATIONS

Students in the Applied Statistics option are expected to be familiar with a formal programming language and must either pass (at the M.S. level) Part III of the doctoral written examinations or an examination covering courses 105, 127, and one of 133 or 150. Students in the Mathematical Statistics option must pass a written examination covering 129, 134, 135, and 150.

All M.S. students must write either a short thesis or an essay. This is normally done during the student's fourth semester. The topic and scope of the work are decided in consultation with, and with the approval of, the student's adviser. Students in the Mathematical Statistics option should write a thesis or essay that demonstrates capability for research or understanding of recent research papers in some area of statistics; those choosing the Applied Statistics option should write an essay or thesis involving the analysis of data.

The final oral examination is given when a student's course work and thesis or essay are complete. The final oral examination is waived for a student who has passed a Ph.D. Preliminary oral examination in statistics.

ADMISSION, FINANCES, DUTIES, AND DEADLINES

Prerequisites

Admission to the Graduate School is necessarily a selective process, and only applicants with academic records of high quality should seek admission. The minimal requirement is a Bachelor of Arts or Bachelor of Science degree from an accredited college or university in this country with a B average or better, or its equivalent based on a four-year curriculum in a foreign institution.

The Department places strong emphasis on the mathematical theory of probability and statistics and thus sound mathematical preparation is an essential prerequisite for admission. An applicant's mathematical background should include a one-year course in advanced (multivariable) calculus or real analysis, at least a one-semester course in matrix algebra, and calculus-based courses in probability and statistics.

Procedures

Application forms for admission and/or financial aid may be obtained by writing either to the Department of Statistics or to the Graduate School. A complete application must include the following:

1. The completed application forms in duplicate.
2. Two official transcripts of all previous undergraduate and graduate work.
3. Three references in duplicate (forms provided) from people familiar with the applicant's academic achievement and potential.
4. A nonrefundable application fee of \$35.00. A successful applicant reserves his/her place by the payment of the nonrefundable deposit which is credited toward the first semester's tuition.
5. Test scores for both the Aptitude and Advanced Mathematics Graduate Examination. This examination is given at regular intervals at most universities in this country and in many countries abroad. Applicants for financial aid should take the examination no later than December for admission the following fall semester. (Under certain exceptional circumstances the Department may waive this requirement.)
6. Students whose native language is not English are required to take the Test of English as a Foreign Language examination (TOEFL) administered by the Educational Testing Service. The required minimum total score on the TOEFL test is 550. (Again, in exceptional circumstances, this requirement may be waived.)

In addition to the above, the Department of Statistics strongly recommends that applicants submit the following material:

7. Brief course descriptions, including text titles where applicable, of all previous undergraduate and graduate courses in (a) probability and statistics, (b) mathematics above the level of elementary calculus, and (c) other courses of a mathematical nature, such as computer science, mathematical physics, etc.
8. A statement of areas of interest in probability and statistics, and of career goals.

Financial Assistance

Over 90 percent of Ph.D. graduate students in the Statistics Department receive financial aid. The Department offers a number of Departmental Assistantships each year to students who enter the Ph.D. program. These assistantships are renewable each academic year, contingent upon satisfactory

progress toward a degree and availability of funds. Normally assistantships are not awarded to a student beyond the fifth academic year. The stipend for 1989-90 is \$8,000. In addition, there are several Merit Assistantships for incoming students with a stipend of \$9,500. Exceptionally strong applicants are nominated by the Department for University Fellowships administered through the Graduate School. Competition for these awards is University-wide, and the 1989-90 stipend is \$12,000 plus tuition and fees. Students are also urged to apply for fellowships available through national, regional, and foundation sources.

Minority Presence Awards

Under the Board of Governors general Minority Presence Grant Program, black students may be eligible for special financial assistance if they are residents of North Carolina, enrolled for at least three hours of degree-credit coursework, and demonstrate financial need.

The Minority Presence Grant Program for Doctoral Study provides stipends of \$9,000 for the academic year, with an option of additional support for study in the summer session, for black residents of North Carolina who are selected to participate. Recipients must be full-time students pursuing doctoral degrees at The University of North Carolina at Chapel Hill.

Tuition and Fees

Full-time students who have been awarded assistantships are eligible for a special tuition rate, currently identical to the in-state rate of \$1,002 per academic year for both tuition and fees. The out-of-state rate for 1989-90 was \$5,504. Entitlement to the special rate is forfeited if a student fails to complete a full semester. Tuition and fees are due at registration; accounts not paid in full by the last day of registration are subject to a late payment fee and the student's possible disenrollment. (Notice is given that these rates may be changed.)

Duties

First-year students on assistantships are not required to teach. Instead, they are assigned to assist one of the professors in the Department with an undergraduate statistics course. Typically this includes helping undergraduate students with problem solving, holding periodic tutorials, and grading homework. Such assignments are carefully controlled so that a full-time course load can be pursued, and normally do not require more than 6-8 hours per week. After the first year, students are asked to teach one elementary-level statistics course per year.

Deadlines

The Department of Statistics normally admits students in the fall semester. The deadlines for application for admission in the fall semester are:

- a) February 1 for admission and financial aid.
- b) July 1 for admission without aid, if space is available.

Further Information

The Department of Statistics welcomes applicants for admission and aid from members of minorities. Admission and aid are awarded without consideration of race, sex, creed, or ethnic origin.

For further information about our graduate program, admission procedures, and financial aid, address inquiries to:

Director of Graduate Admissions
Department of Statistics
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3260
(919) 962-2307.

COURSES^{1,2}**GRADUATE AND ADVANCED UNDERGRADUATE**

- 101 STATISTICAL METHODS I (Biostatistics 150) (3). Prerequisite, integral calculus. Basic probability, descriptive statistics, introduction to statistical inference including estimation, hypothesis testing, simple linear regression, nonparametric tests, contingency tables. Use of statistical computer packages. *Fall and spring.* Chakravarti, Fan, Marron.
- 102 STATISTICAL METHODS II (3). Prerequisite, Statistics 101. Linear regression, experimental designs, multivariate analysis, statistical computer packages. *Spring.* Chakravarti.
- 104 SAMPLE SURVEY METHODOLOGY (Biostatistics 164) (3). Pre-requisite, Statistics 102 or equivalent. Fundamental principles and methods associated with survey sampling, giving primary attention to as nonmathematical as possible a treatment of simple random sampling, stratified sampling, and cluster sampling. Also, techniques of questionnaire design, the problems of nonresponse, and sources of nonsampling errors. Practical experience in the applied aspects of sampling is provided by student participation in the design, execution, and analysis of an actual survey. *Spring.* Kalsbeek.
- 107 ACTUARIAL MATHEMATICS II (Mathematics 162) (3). Prerequisites, Mathematics 161, Statistics 126. The theory introduced in Actuarial Mathematics I is expanded to encompass more complex models of financial transactions and risks. *Spring.* Staff.
- 126 INTRODUCTION TO PROBABILITY (Mathematics 146) (3). Prerequisite, Mathematics 33. Introduction to mathematical theory of probability covering random variables, moments, binomial, Poisson, normal and related distributions, generating functions, sums and sequences of random variables, and statistical applications. *Fall and spring.* Kelly, Marron.
- 127 MATHEMATICAL STATISTICS (3). Prerequisite, Statistics 126 or equivalent. Functions of random samples and their probability distributions; introductory theory of point and interval estimation and of hypothesis testing; elementary decision theory. *Fall and spring.* Carlstein, Fan, Marron, Simons.

1. Names represent recent and anticipated instructors of these courses.

2. Advanced courses are taught in alternate years depending on demand.

GRADUATE

- 105 ELEMENTS OF STATISTICAL ANALYSIS (3). Prerequisite, permission of instructor. Various topics in statistical methods, including applied regression analysis, analysis of simple experimental designs, data analysis, discrete multivariate data. *Fall.* Carlstein.
- 111 METHODS OF MATHEMATICAL STATISTICS (3). Prerequisite, advanced calculus. Introductory treatment of special mathematical techniques of particular importance in probability and statistics, including complex variables, Fourier and Laplace transforms, elements of finite difference equations. *Spring.* Baker.
- 112 MEASURE AND INTEGRATION (3). Prerequisite, advanced calculus. Lebesgue and abstract measure and integration, convergence theorems, differentiation. Radon-Nikodym theorem, product measures. Fubini theorems. L_p spaces. *Fall.* Baker, Cambanis, Kallianpur, Leadbetter.
- 129 INTRODUCTION TO STOCHASTIC PROCESSES (3). Prerequisites for nonstatistics majors, Statistics 126 and permission of instructor. Elementary theory and application of random process models, recurrent events, random walks. Markov chains. Poisson processes, birth-and-death processes, queueing processes, branching processes, Brownian motion, stationary processes. *Fall.* Leadbetter. W. Smith.
- 132 INTERMEDIATE PROBABILITY (Mathematics 195) (3). Prerequisite, Statistics 112 or permission of instructor. Foundations of probability. Basic classical theorems. Modes of probabilistic convergence. Central limit problem. Generating functions, characteristic functions. Conditional probability and expectation. *Spring.* Cambanis, Kelly, Leadbetter.
- 133 INTRODUCTION TO TIME SERIES ANALYSIS (3). Prerequisite, Statistics 126. Topics chosen from: Time series data analysis. Fitting parametric models, such as autoregressive models to time series. Spectral analysis. Filtering. *Spring.* Cambanis, Leadbetter.
- 134 INTERMEDIATE STATISTICAL THEORY I (3). Prerequisite, two semesters of advanced calculus. Fundamentals of probability and distribution theory including: axiomatic treatment of probability, independence, random variables, characteristic functions, convergence and approximation, common distributions. *Fall.* Kelly, Simons.
- 135 INTERMEDIATE STATISTICAL THEORY II (3). Prerequisite, Statistics 134 or equivalent. Fundamentals of statistical inference including: sufficient statistics, estimation, hypothesis testing, decision theory, various classical tests. Linear estimation and analysis of variance and regression are largely excluded (see Statistics 150). *Spring.* Ji, Marron, Simons.

- 140 LINEAR SYSTEMS (3). Prerequisites, advanced calculus, elements of Fourier transforms theory, linear algebra and Lebesgue integration helpful. Introduction to linear spaces, including basic results on normed linear spaces, Hilbert space geometry, bounded linear operators. Linear system theory, including signal representations, impulse response, transfer functions, dynamical systems, state variable methods, elementary modern control theory. Cambanis.
- 141 LINEAR OPERATORS AND OPTIMIZATION (3). Prerequisite, Statistics 140 or a knowledge of the basic theory of normed linear spaces and linear operators. Basic properties of compact operators. Dual spaces. Optimization in linear spaces, especially algorithmic methods. Optimization of functions and constrained optimization. Baker.
- 142 INTRODUCTION TO ESTIMATION AND DETECTION THEORY (3). Prerequisites, Statistics 129, 134, 140. The Wiener-Kolmogorov and the Kalman-Bucy filtering theories. Modulation theory. Basic problems of detection theory. Cambanis.
- 150 ANALYSIS OF VARIANCE WITH APPLICATION TO EXPERIMENTAL DESIGNS (3). Corequisite, Statistics 135. Linear estimation. Gauss-Markov theorem. Sums of squares. Analysis of variance and simple factorial designs. Intrablock analysis of incomplete block designs. Balanced, lattice, and Latin square designs. *Spring*. Chakravarti, Marron.
- 156 COMBINATORIAL MATHEMATICS (Mathematics 148) (3). Prerequisite, Mathematics 81 or equivalent, or permission of the instructor. Topics chosen from: generating functions, Polya's theory of counting, partial orderings and incidence algebras, principle of inclusion-exclusion, Moebius inversion, combinatorial problems in physics and other branches of science. *Fall*. Brylawski.
- 158 INTRODUCTION TO GRAPH THEORY (Mathematics 149) (3). Prerequisite, Mathematics 116, 137, or 147. Basic concepts of directed and undirected graphs, partitions and distances in graphs. Planar and nonplanar graphs. Matrix representation of graphs, network flows, applications of graph theory. Staff.
- 160 APPLIED MULTIVARIATE ANALYSIS I (Biostatistics 166) (3). Prerequisite, Statistics 102. Application of multivariate techniques with emphasis on the use of computer programs. Multivariate analysis of variance, multivariate multiple regression, weighted least squares, principal component analysis, canonical correlation, and related techniques. *Summer*. Muller.
- 171 INTRODUCTION TO NONPARAMETRIC STATISTICS (Biostatistics 256) (3). Prerequisite, Biostatistics 160 or equivalent. Theory and application of nonparametric methods for various problems in statistical analysis. Includes procedures based on randomization,

ranks, and U-statistics. A knowledge of elementary computer programming is assumed. *Fall.* Bangdiwala.

180 STOCHASTIC MODELS (3). Prerequisite, Statistics 126. Introduction to queueing theory (substantial). Markovian sequential decision process, inventory theory and topics from stochastic linear programming, simulation, scheduling, game theory. Applications. W. Smith.

181 DETERMINISTIC MODELS IN OPERATIONS RESEARCH (Mathematics 151, Operations Research 181) (3). Prerequisite, Mathematics 147. Linear, integer nonlinear and dynamic programming, classical optimization problems, network theory. *Fall.* Provan, Tolle.

ADVANCED GRADUATE

200 APPLIED MULTIVARIATE ANALYSIS II (2). Prerequisite, Statistics 105 or 135. Relations between multiple regression, analysis of variance, multivariate analysis, and factor analysis. Principle components. Discriminant analysis, canonical analysis. Scaling methods. Classification problems. Cluster analysis. Staff.

205 STATISTICAL QUALITY IMPROVEMENT (3). Prerequisites, Statistics 105, 135, 150. Methods for quality improvement through process control, graphical methods, designed experimentation. Shewhart charts, cusum schemes, methods for autocorrelated multivariate process data, process capability analysis, factorial and response surface designs, attribute sampling. Rodriguez.

210 DESIGN AND ANALYSIS OF EXPERIMENTS (3). Prerequisites, Statistics 105 and 150. The principles of the design and analysis of experiments. Latin and Graeco-Latin squares, incomplete block designs, factorial experiments. Confounding, fractional factorials, split plots, missing plots. Interblock analysis, covariance analysis. Response surfaces. Chakravarti.

211 SPECIAL TOPICS IN THE DESIGN OF EXPERIMENTS (3). Prerequisite, Statistics 150. Factorial experiments, construction and analysis of symmetrical, mixed, and fractional factorial designs. Orthogonal and balanced arrays. Response surface methodology. Mixture and screening designs. Optimality of designs. Recent developments. Chakravarti.

212 COMBINATORIAL PROBLEMS OF THE DESIGN OF EXPERIMENTS (3). Prerequisite, Statistics 150. Finite groups, fields, and geometries. Difference sets. Orthogonal Latin squares, orthogonal arrays, balanced and partially balanced incomplete block designs.

- Algebras of association schemes and relations. Randomization, orthogonal designs, general balance, and strata. Chakravarti.
- 220 **ESTIMATION, HYPOTHESIS TESTING, AND STATISTICAL DECISION (3).** Prerequisites: Statistics 132, 135. Bayes procedures for estimation and testing. Minimax procedures. Unbiased estimators. Unbiased tests and similar tests. Invariant procedures. Sufficient statistics. Confidence sets. Large sample theory. Statistical decision theory. Simons.
- 221 **SEQUENTIAL ANALYSIS (3).** Prerequisites, Statistics 132 and 135. Hypothesis testing and estimation when the sample size depends on the observations. Sequential probability ratio tests. Sequential design of experiments. Optimal stopping. Stochastic approximation. Simons.
- 222 **NONPARAMETRIC INFERENCE: RANK-BASED METHODS (3).** Prerequisites, Statistics 132, 135. Estimation and testing when the functional form of the population distribution is unknown. Rank, sign, and permutation tests. Optimum nonparametric tests and estimators, including simple multivariate problems. Sen.
- 223 **NONPARAMETRIC INFERENCE: SMOOTHING METHODS (3).** Prerequisites, Statistics 132, 135. Density and regression estimation when no parametric model is assumed. Kernel, spline, and orthogonal series methods. Emphasis on analysis of the smoothing problem and data based smoothing parameter selectors. Marron.
- 224 **STATISTICAL LARGE SAMPLE THEORY (3).** Prerequisites: Statistics 132, 135. Asymptotically efficient estimators; maximum likelihood estimators. Asymptotically optimal tests; likelihood ratio tests. Simons.
- 225 **SUBSAMPLING TECHNIQUES (3).** Prerequisite, Statistics 135. Basic subsampling concepts: replicates, empirical c.d.f., U-statistics. Subsampling for i.i.d. data: jackknife, typical-values, bootstrap. Subsampling for dependent or nonidentically distributed data: blockwise and other methods. Carlstein.
- 231 **ADVANCED PROBABILITY (3).** Prerequisites, Statistics 112, 132. Advanced theoretic course covering topics selected from: weak convergence theory, central limit theorems, laws of large numbers, stable laws, random walks, martingales. Kallianpur, W. Smith.
- 232 **STOCHASTIC PROCESSES (3).** Prerequisites, Statistics 112, 132. Advanced theoretic course including topics selected from: Foundations of stochastic processes, renewal processes, stationary processes, Markov processes, martingales, point processes. Baker, Cambanis.
- 233 **TIME SERIES ANALYSIS (3).** Prerequisites, Statistics 112, 132. Analysis of time series data by means of particular models such as autoregressive and moving average schemes. Spectral theory for stationary processes and associated methods for inference. Stationarity testing. Leadbetter.

- 234 EXTREME VALUE THEORY (3). Prerequisites, Statistics 132 and 134. Classical asymptotic distributional theory for maxima and order statistics from i.i.d. sequences, including extremal types theorem, domains of attraction, Poisson properties of high level exceedances. Extremal properties of stationary stochastic sequences and continuous time processes. Leadbetter.
- 235 POINT PROCESSES (3). Prerequisite, Statistics 132. Random measures and point processes on general spaces, general Poisson and related processes, regularity, compounding. Point processes on the real line, stationarity and Palm distributions, Palm-Khintchine formulae. Convergence of point processes and related topics. Leadbetter.
- 236 STOCHASTIC ANALYSIS (3). Prerequisite, Statistics 112, 132, or permission of the instructor. Advanced course covering topics selected from: semimartingale theory, stochastic integrals, homogeneous chaos expansions, stochastic differential equations, Malliavin calculus, infinite dimensional processes, functional central limit theorems, Feynman-Kac formula, Feynman integral. Applications to filtering theory, infinite particle systems, quantum mechanics, and stochastic models in neurophysiology. Kallianpur.
- 242 PROBABILITY IN LINEAR SPACES (3). Prerequisite, Statistics 112. Elements of theory of normed linear spaces. Results from linear topology. Borel structures. Probability measures on Borel sets of separable Banach spaces. Characteristic functionals. Extension of cylinder set measures. Gaussian measures. Orthogonality and equivalence of measures. Baker.
- 245 ADVANCED TOPICS IN STATISTICAL COMMUNICATION THEORY (3). Prerequisite, Statistics 242. Applications of probability in linear spaces to problems in information theory, signal detection, and sample path analysis of stochastic processes. Baker.
- 252 INFORMATION THEORY (3). Prerequisite, Statistics 134. Transmission of information, entropy, message ensembles, discrete sources, transmission channels, channel encoding, and decoding for discrete channels. Chakravarti.
- 253 ERROR CORRECTING CODES (3). Prerequisite, Statistics 212, or permission of the instructor. Linear codes and their error-correcting capabilities. Hamming codes, Reed-Miller codes, cyclic codes, Bose-Chaudhuri codes, Goppa codes. Burst error corrections. Majority logic decoding. Chakravarti.
- 260 MULTIVARIATE ANALYSIS (3). Prerequisites, Statistics 135 and matrices. Multivariate normal distributions. Related distributions. Tests and confidence intervals. Multivariate analysis of variance, covariance, and regression. Association between subsets of a multivariate normal set. Theory of discriminant, canonical, and factor analysis. Chakravarti.

- 261 ADVANCED PARAMETRIC MULTIVARIATE ANALYSIS (3). Prerequisite, Statistics 260. Distribution problems involved in the normal theory analysis of general multivariate linear models including the growth curves. Roy's union-intersection principle and its role in multivariate analysis. An introduction to zonal polynomials and orthogonal groups. Chakravarti, Sen.
- 262 NONPARAMETRIC MULTIVARIATE ANALYSIS (3). Prerequisite, Statistics 222. Nonparametric MANOVA. Large sample properties of the tests and estimates. Robust procedures in general linear models including the growth curves. Nonparametric classification problems. Sen.
- 280 ADVANCED STOCHASTIC METHODS OF OPERATIONS RESEARCH (3). Prerequisite, Statistics 132. Topics chosen from: renewal theory, queues with random arrivals, inequalities for queues, priority systems, theory of reservoirs, stochastic inventory problems. W. Smith.
- 300 SEMINAR IN STATISTICAL LITERATURE (1). Prerequisite, Statistics 135.
- 302 SEMINAR IN STATISTICAL DATA ANALYSIS (Var.). Prerequisite, Statistics 105.
- 310, 311 SEMINAR IN THEORETICAL STATISTICS (3). Prerequisite, Statistics 135.
- 321, 322 SPECIAL PROBLEMS (3). Prerequisite, permission of the instructor.
- 331, 332 ADVANCED RESEARCH (3). Prerequisite, permission of the instructor.
- 393 MASTER'S THESIS (Var.). Prerequisite, permission of the student's adviser. *Fall and spring.* Staff.
- 394 DOCTORAL DISSERTATION (Var.). Prerequisite, permission of the student's adviser. *Fall and spring.* Staff.
- 400 GENERAL REGISTRATION.

The Faculty

CHARLES R. BAKER, *Professor.* B.S. (1957), University of Southwestern Louisiana; M.S. (1963), Ph.D. (1967), University of California at Los Angeles.

Areas of Interest: Statistical Communication Theory, Stochastic Processes.

STAMATIS CAMBANIS, *Professor and Chairman,* B.S. (1966), National Technical University (Athens, Greece); M.A. (1968), Ph.D. (1969), Princeton University. Fellow, Institute of Mathematical Statistics, In-

stitute of Electrical and Electronics Engineers.

Areas of Interest: Statistical Communication Theory, Stochastic Processes.

EDWARD CARLSTEIN, *Assistant Professor*, B.Sc. (1979), Cornell University; M.A. (1980), M. Phil. (1983), Ph.D. (1984), Yale University.

Areas of Interest: Stationary Processes, Nonparametric Estimation.

INDRA MOHAN CHAKRAVARTI, *Professor*, B.Sc. (1948), M.Sc. (1950), D. Phil. (1958), University of Calcutta. Fellow, Institute of Mathematical Statistics; Member, International Statistical Institute.

Areas of Interest: Design of Experiments, Combinatorics, Information and Coding Theory.

JIANQING FAN, *Assistant Professor*, B.S. (1982), Fudan University (Shanghai, China); M.A. (1985), Academia Sinica (Beijing, China); Ph.D. (1989), University of California, Berkeley.

Areas of Interest: Nonparametric Functional Estimation, Statistical Inference, Semiparametrics.

WASSILY HOEFFDING, *Kenan Professor Emeritus*, Ph.D. (1940), University of Berlin. Member, National Academy of Sciences, International Statistical Institute. Fellow, Institute of Mathematical Statistics, American Statistical Association.

Area of Interest: Statistical Inference.

CHUANSHU JI, *Assistant Professor*, B.S. (1981), Tsinghua University, (China); M.A. (1982), M.Ph. (1986), Ph.D. (1988), Columbia University.

Areas of Interest: Inference for Random Fields, Time Series.

NORMAN LLOYD JOHNSON, *Alumni Distinguished Professor Emeritus*. Ph.D. (1948), D.Sc. (1963), University College, London. Fellow, Institute of Mathematical Statistics, Institute of Actuaries, American Statistical Association; Member, International Statistical Institute.

Areas of Interest: Multivariate Analysis, Statistical Inference.

GOPINATH KALLIANPUR, *Alumni Distinguished Professor*, B.A. (1945), M.A. (1946), University of Madras; Ph.D. (1951), The University of North Carolina, Fellow, Institute of Mathematical Statistics, Indian Academy of Sciences; Member, International Statistical Institute.

Areas of Interest: Probability, Stochastic Processes, Filtering and Control Theory.

DOUGLAS G. KELLY, *Professor*, A.B. (1961), Princeton University; A.M. (1964), Ph.D. (1967), Indiana University.

Areas of Interest: Probability, Combinatorics, Modeling of Biological Processes.

MALCOLM ROSS LEADBETTER, *Professor*, B.Sc. (1953), M.Sc. (1955), University of Otago (New Zealand); B.A. (1958), M.A. (1962), University of Cambridge; Ph.D. (1963), The University of North Carolina at Chapel Hill. Member, International Statistical Institute. Fellow,

American Statistical Association, Institute of Mathematical Statistics.

Areas of Interest: Probability, Stochastic Processes.

BARRY MARGOLIN, *Adjunct Professor and Chairman of Department of Biostatistics*, B.S. (1963), City College of New York; M.A. (1964), Ph.D. (1967), Harvard University. Fellow, American Statistical Association; Member, International Statistical Institute.

Area of Interest: Design and Analysis of Experiments, Categorical Data, Genetic Toxicology.

JAMES STEPHEN MARRON, *Associate Professor*, B.Sc. (1977), University of California, Davis; M.A. (1980), Ph.D. (1982), University of California, Los Angeles.

Areas of Interest: Nonparametric Statistics, Density Estimation, Statistical Inference.

ROBERT N. RODRIGUEZ, *Adjunct Associate Professor*, B.Sc. (1972), Case Institute of Technology; M.S. (1976), Ph.D. (1977), The University of North Carolina at Chapel Hill.

Areas of Interest: Quality Improvement, Statistical Computer Graphics.

PRANAB KUMAR SEN, *Professor*, M.Sc. (1957), Ph.D. (1962), Calcutta University. Fellow, American Statistical Association, Institute of Mathematical Statistics; Member, International Statistical Institute.

Areas of Interest: Nonparametric Statistics, Multivariate Analysis, Sequential Analysis.

GORDON D. SIMONS, *Professor*, B.A. (1960), M.A. (1964), Ph.D. (1966), University of Minnesota. Fellow, Institute of Mathematical Statistics.

Areas of Interest: Sequential Analysis, Statistical Inference, Probability Theory.

RICHARD L. SMITH, *Professor*, B.A. (1975), Oxford University; Ph.D. (1979), Cornell University. Fellow, Royal Statistical Society.

Areas of Interest: Extreme Value Theory, Reliability, Time Series, Asymptotic Theory, Applied Probability.

WALTER LAWS SMITH, *Professor*, B.A. (1947), M.A. (1951), Ph.D. (1953), University of Cambridge. Fellow, Cambridge Philosophical Society, Institute of Mathematical Statistics, American Statistical Association. Member, International Statistical Institute.

Areas of Interest: Probability, Stochastic Processes.

WILLEM R. VAN ZWET, *William Newman Research Professor*, Ph.D. (1964), University of Amsterdam. Honorary Fellow, Royal Statistical Society; Fellow, Institute of Mathematical Statistics; Member, International Statistical Institute, Netherlands Royal Academy of Science.

Areas of Interest: Asymptotic Statistics, Estimation Theory, Statistical Inference, Probability Theory.

THE UNIVERSITY OF NORTH CAROLINA

Sixteen Constituent Institutions

C. D. Spangler, Jr., B.S., M.B.A., LL.D., *President*

Raymond H. Dawson, B.A., M.A., Ph.D., *Vice-President—Academic Affairs*

L. Felix Joyner, A.B., *Vice-President—Finance*

Roy Carroll, B.A., M.A., Ph.D., *Vice-President—Planning*

Nathan F. Simms, Jr., B.S., M.S., Ph.D., *Vice-President—Student Services and Special Programs*

Jasper D. Memory, B.S., Ph.D., *Vice-President—Research and Public Service*

Wyndham Robertson, A.B., *Vice-President—Communications*

Jay M. Robinson, B.S., M.A., Ed.D., *Vice-President—Public Affairs*

David G. Martin, Jr., B.A., LL.B., *Secretary of the University*

Richard H. Robinson, Jr., A.B., LL.B., *Assistant to the President*

John W. Dunlop, B.A., *Director, The University of North Carolina Center for Public Television*

History of the University

The University of North Carolina is composed of all the public institutions of higher education in North Carolina that confer degrees at the baccalaureate level or higher. The University was authorized by the State Constitution in 1776, and it was chartered in 1789 by the General Assembly.

The University of North Carolina opened its doors to students at Chapel Hill in 1795. Thereafter, beginning in the latter part of the nineteenth century, the General Assembly of North Carolina has established and supported fifteen other public senior institutions in keeping with Article IX, Section 8, of the Constitution of North Carolina which provides that the "General Assembly shall maintain a public system of higher education, comprising The University of North Carolina and such other institutions of higher education as the General Assembly may deem wise."

By 1969 The University of North Carolina included six constituent institutions, governed by a single Board of Trustees. This multicampus University had its beginnings in legislation enacted in 1931 that defined The University of North Carolina to include The University of North Carolina at Chapel Hill, North Carolina State University at Raleigh, and The University of North Carolina at Greensboro. In the 1960s three additional campuses were added: The University of North Carolina at Charlotte, The University of North Carolina at Asheville, and The University of North Carolina at Wilmington.

Beginning in 1877, the General Assembly of North Carolina established or acquired ten additional separately governed state-supported senior institutions of higher education. They are: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State

University. Then, in 1971, the General Assembly redefined The University of North Carolina, and under the terms of that legislation all sixteen public senior institutions became constituent institutions of The University of North Carolina.

The constitutionally authorized Board of Trustees of the sixteen-campus University of North Carolina was designated the Board of Governors and this body is by law The University of North Carolina. The Board of Governors consists of thirty-two members elected by the General Assembly, and it is charged with "the general determination, control, supervision, management, and governance of all affairs of the constituent institutions." The chief executive officer of the University is the President.

Each constituent institution of the University has its own faculty and student body. The chief administrative officer of each institution is the chancellor, and the chancellors are responsible to the President.

Each constituent institution also has a board of trustees composed of thirteen members: eight elected by the Board of Governors, four appointed by the Governor, and the elected president of the student body *ex officio*. (The School of the Arts has two additional *ex officio* trustees.) The principal powers of these institutional boards are exercised under a delegation of authority from the Board of Governors.

Appendix A

RESIDENCE STATUS FOR TUITION PURPOSES¹

The following sections summarize important aspects of the residency law. A complete explanation of the Statute and the procedures under the Statute is contained in *A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes*. This *Manual* and other information concerning the application of this law are available for inspection in the Admissions Offices of the University. Copies of the *Manual* are also on reserve at the Robert B. House Undergraduate Library and in the Reserve Reading Room of the Health Sciences Library. All students are responsible for knowledge of the contents of the Statute and the *Manual*.

Every applicant for admission is required to make a statement as to his or her length of residence in North Carolina. A person who qualifies as a resident for tuition purposes under North Carolina law pays a lower rate of tuition than a nonresident. To qualify for in-state tuition, a legal resident must have been domiciled in North Carolina for at least twelve months immediately prior to the beginning of the term for which classification as a resident for tuition purposes is sought. The student must also establish that his or her presence in the State during such twelve-month period was for purposes of maintaining a bona fide domicile rather than for purposes of maintaining a mere temporary residence incident to enrollment in an institution of higher education. "Domicile" means one's permanent home of indefinite duration, as distinguished from a temporary place of abode; it is synonymous with "legal residence" and is established by being physically present in a place with the concurrent intent to make that place a domicile. To determine an individual's intent, the University evaluates his or her objectively verifiable conduct as an indicator of his or her state of mind.

Procedural Information

General. A student admitted to initial enrollment in an institution (or permitted to re-enroll following an absence from the institutional program which involved a formal withdrawal from enrollment) is classified by the admitting institution either as a resident or as a nonresident for tuition purposes prior to actual matriculation. In the absence of a current and final determination of the student's residence prior to matriculation, the student is classified a nonresident for tuition purposes. The institution will thereafter reach a final determination of the student's residence status. Unless a person supplies enough information to allow the admissions officer to classify him or her as a resident for tuition purposes, the person will be classified a nonresident for tuition purposes. A residence classification once assigned (and confirmed pursuant to any appellate process invoked) may be changed thereafter (with a corresponding change in billing rates) only at intervals corresponding with the established primary divisions of the academic calendar.

Transfer Students. When a student transfers from one North Carolina public institution of higher education to another, he or she is required to be treated as a new student by the institution to which he or she is transferring and must be assigned an initial residence classification for tuition purposes. The residence classification of a student by one institution is not binding on another institution. The North Carolina institutions of higher education will assist each other by supplying residency information and classification records concerning a student to another classifying institution upon request.

The transfer into or admission to a different component of the same institution (e.g., from an undergraduate to a graduate or professional program) is not construed as a transfer from one institution to another and thus does not by itself require a reclassification inquiry unless (1) the affected student requests a reclassification inquiry or (2) the transfer or enrollment occurs following the lapse of more than one quarter, semester, or term during which the individual was not enrolled as a student.

Responsibility of Students and Prospective Students. Any student or prospective student in doubt concerning his or her residence status bears the responsibility for securing a ruling by completing an application for resident status and filing it with the admissions officer. The student who, due to subsequent events,

¹The information in this section comes from three sources: (i) North Carolina General Statutes, §116-143.1, (ii) *A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes*, Revised September 1985, (iii) Chancellor's Rules and Procedures for Residence Classification of Students for Tuition Purposes.

becomes eligible for a change in classification, whether from out-of-state to in-state or the reverse, has the responsibility of immediately informing the Office of Admissions of these circumstances in writing. Failure to give complete and correct information regarding residence constitutes grounds for disciplinary action.

Application Process. A person may obtain an application for resident status from his or her admissions office. Applicants for admission who claim eligibility for the in-state tuition rate customarily complete a two-page residency application as a part of the admissions application packet. Some applicants for admission will thereafter be required to complete a further, four-page, residency application. Enrolled students seeking a change from nonresident to resident status are required to complete a four-page residency application. *All* applications for resident status must be filed with the proper admissions office before the end of the term for which resident status for tuition purposes is sought. The last day of the final examination period is considered the last day of the term.

After filing a resident status application, a person may receive a letter from his or her admissions office requesting more information in connection with that application. When a student receives such a request before the end of the term for which classification is sought, he or she must respond to that request no later than three weeks after the end of the term. If the student receives the request for supplemental information after the end of the term in question, he or she must supply the requested information within three weeks after receipt of the request. Failure to supply the requested information within the specified time limit will result in a continuation of the student's nonresident classification unless good cause is shown for such failure.

The admissions office may require an applicant for admission to file a residency application, or respond to a request for more information, more quickly when residence status is a factor in the admissions decision.

The pamphlet "Information About Resident Status for Tuition Purposes" contains more details about the residency application process and is available at all admissions offices.

Fraudulent Applications. If a student is classified a resident for tuition purposes after submitting falsified residency information or after knowingly withholding residency information, the student's application for in-state tuition status is fraudulent. The institution may re-examine any application suspected of being fraudulent and, if warranted, will change the student's residence status retroactively to the beginning of the term with respect to which the student originally made the fraudulent application. If this occurs the student must pay the out-of-state tuition differential for all the enrolled terms intervening between the fraudulent application and its discovery. Further, knowing falsification of responses on a resident status application may subject the applicant to disciplinary consequences, including dismissal from the institution.

Burden of Proof and Statutory Prima Facie Evidence. A person has the burden of establishing facts which justify his or her classification as a resident for tuition purposes. The balancing of all the evidence must produce a preponderance of evidence supporting the assertion of in-state residence. Under the Statute, proof of resident status is controlled initially by one of two evidentiary beginning points which are stated in terms of *prima facie* evidence.

- a. Even if the person is an adult, if his or her parents (or court-appointed guardian in the case of some minors) are not legal residents of North Carolina, this is *prima facie* evidence that the person is not a legal resident of North Carolina unless he or she has lived in this state the five consecutive years prior to enrolling or re-registering. To overcome this *prima facie* showing of nonresidence, a person must produce evidence that he or she is a North Carolina domiciliary despite the parents' nonresident status.
- b. Conversely, if the person's parents are domiciliaries of North Carolina under the Statute, this fact constitutes *prima facie* evidence that the person is a domiciliary of North Carolina. This *prima facie* showing may also be overcome by other evidence to the contrary. If a person has neither living parents nor legal guardian, the prescribed *prima facie* evidence rule cannot and does not apply.

Erroneous Notices Concerning Classification. If a student, who has been found to be a nonresident for tuition purposes, receives an erroneous written notice from an institutional officer identifying the student as a resident for tuition purposes, the student is not responsible for paying the out-of-state tuition differential for any enrolled term beginning before the classifying institution notifies the student that the prior notice was erroneous.

Grace Period. If a student has been properly classified as a North Carolina resident for tuition purposes and, thereafter, his or her state of legal residence changes while he or she is enrolled in a North Carolina public institution of higher education, the statute provides for a grace period during which the student is allowed to pay tuition at the in-state rate despite the fact that the student is no longer a North Carolina legal resident. This grace period extends for a minimum of twelve months from the date of change in

legal residence, and if the twelve-month period ends during a semester or academic term in which the student is enrolled, the grace period extends also to the end of that semester or academic term.

Reacquisition of Resident Tuition Status. The prescribed twelve-month period of legal residence may be shortened if the person seeking to be classified as a resident for tuition purposes was formerly classified a North Carolina resident for tuition purposes, abandoned North Carolina domicile, and reestablished North Carolina domicile within twelve months after abandoning it. Interested persons should consult their admissions offices for a detailed explanation of the conditions which must be met to qualify under this section.

Appeals. A student appeal of a classification decision made by any admissions officer must be in writing and signed by the student and must be filed by the student with that officer within fifteen working days after the student receives notice of the classification decision. The appeal is transmitted to the Residence Status Committee by that officer, who does not vote in that Committee on the disposition of such appeal. The student is notified of the date set for consideration of the appeal, and, on request of the student, he or she is afforded the opportunity to appear and be heard by the Committee. Any student desiring to appeal a decision of the Residence Status Committee must give notice in writing of that fact (within ten days of receipt of the Committee's decision) to the Chairman of the Residence Status Committee, and the Chairman promptly processes the appeal for transmittal to the State Residence Committee.

It is the responsibility of the student to pay tuition at the rate charged and billed while an appeal is pending. In effect, the student who is classified a nonresident at the time of tuition billing pays the nonresident rate. Conversely, if a student is classified as a resident at the time of billing, he or she pays the resident rate. Any necessary adjustments in the rate paid will be made at the conclusion of the appeal.

Application of the Law to Specific Situations

Aliens. Aliens who are permanent residents of the U.S., or who hold a visa which will permit eventual permanent residence in the U.S., are subject to the same considerations with respect to determination of legal residence as citizens. An alien abiding in the U.S. under a visa conditioned at least in part upon intent not to abandon a foreign domicile (B, F, H, and J visas) cannot be classified a resident. An alien abiding in the U.S. under a visa issued for a purpose which is so restricted as to be fundamentally incompatible with an assertion by the alien of bona fide intent to establish a legal residence (C, D, and M visas) cannot be classified a resident.

Possession of certain other immigration documents may also allow an alien to be considered for in-state tuition status. For more details aliens should consult their admissions offices and the *Manual*. Aliens must file a Residence Status Supplemental Form in addition to the forms normally required of applicants for resident status for tuition purposes.

Married Persons. The domicile of a married person, irrespective of sex, is determined by reference to all relevant evidence of domiciliary intent. No person is precluded, solely by reason of marriage to a person domiciled outside of North Carolina, from establishing or maintaining legal residence in North Carolina. No person is deemed, solely by reason of marriage to a person domiciled in North Carolina, to have established or maintained a legal residence in North Carolina. The fact of marriage and the place of the domicile of his or her spouse are deemed relevant evidence to be considered in ascertaining domiciliary intent.

If a person otherwise can demonstrate compliance with the fundamental statutory requirement that he or she be a legal resident of North Carolina before the beginning of the term for which resident status is sought, the second statutory requirement relating to duration of residence may be satisfied derivatively, in less than twelve months, by reference to the length of the legal residence of the person's spouse, if the spouse has been a legal resident of the State for the requisite twelve-month period.

Military Personnel. The domicile of a person employed by the Federal government is not necessarily affected by assignment in or reassignment out of North Carolina. Such a person may establish domicile by the usual requirements of residential act plus intent. No person loses his or her in-state resident status solely by serving in the armed forces outside of the State of North Carolina.

Minors. A minor is any person who has not reached the age of eighteen years. Under the common law, a minor child whose parents are not divorced or legally separated is presumed to have the domicile of his or her father. This presumption may be rebutted if a preponderance of the evidence indicates that the mother and father have separate domiciles *and* that, under the circumstances, the child can fairly be said to derive his or her domicile from the mother. If the father is deceased, the domicile of the minor is that of the surviving mother. If the parents are divorced or legally separated, the domicile of the minor

is that of the parent having custody by virtue of a court order; or, if no custody has been granted by virtue of court order, the domicile of the minor is that of the parent with whom he or she lives; or, if the minor lives with neither parent, in the absence of a custody award, the domicile of the minor is presumed to remain that of the father. If the minor lives for part of the year with each parent, in the absence of a custody award, the minor's domicile is presumed to remain that of the father. These common law presumptions control even if the minor has lived in North Carolina for five years as set forth above in **Burden of Proof and Statutory Prima Facie Evidence**, subsection a.

In determining residence status for tuition purposes, there are three exceptions to the above provisions:

1. If a minor's parents are divorced, separated, or otherwise living apart and one parent is a legal resident of North Carolina, during the time period when that parent is entitled to claim, and does claim, the minor as a dependent on the North Carolina individual income tax return, the minor is deemed to be a legal resident of North Carolina for tuition purposes, notwithstanding any judicially determined custody award with respect to the minor.

If, immediately prior to his or her eighteenth birthday, a person would have been deemed to be a North Carolina legal resident under this provision but he or she achieves majority before enrolling in a North Carolina institution of higher education, that person will not lose the benefit of this provision if the following conditions are met:

- a. Upon achieving majority the person must act, as much as possible, in a manner consistent with bona fide legal residence in North Carolina; and
- b. The person must begin enrollment at a North Carolina institution of higher education not later than the fall academic term next following completion of education prerequisite to admission at the institution.

2. If, immediately prior to beginning an enrolled term, the minor has lived in North Carolina for five or more consecutive years in the home of an adult relative (other than a parent) who is a legal resident of North Carolina, and if the adult relative, during those years, has functioned as a de facto guardian of the minor, then the minor is considered a legal resident of North Carolina for tuition purposes. If a minor qualified for resident status for tuition purposes under this provision immediately prior to his or her eighteenth birthday, then, upon becoming eighteen, he or she will be deemed to be a legal resident of North Carolina of at least twelve months' duration.

3. Even though a person is a minor, under certain circumstances the person may be treated by the law as being sufficiently independent from his or her parents as to enjoy a species of adulthood for legal purposes. If the minor marries or obtains a judicial decree of emancipation under N.C. Gen. Stat. §7A-717, *et seq.*, he or she is emancipated. The consequence, for present purposes, of such emancipation is that the affected person is presumed to be capable of establishing a domicile independent of that of the parents; it remains for that person to demonstrate that a separate domicile has, in fact, been established.

Prisoners. There are special provisions concerning domicile of prisoners. For more information, persons to whom these provisions may apply should consult the *Manual*.

Property and Taxes. Ownership of property in or payment of taxes to the State of North Carolina apart from legal residence will not qualify one for the in-state tuition rate.

Students or prospective students who believe that they are entitled to be classified residents for tuition purposes should be aware that the processing of requests and appeals can take a considerable amount of time and that applications for classification should not be delayed until registration, when the number of applications makes accelerated handling impossible.

MILITARY TUITION BENEFIT¹

Certain members of the Armed Services, and their dependent relatives, who are not residents for tuition purposes may become eligible to be charged less than the out-of-state tuition rate under N.C. Gen. Stat. §116-143.3, the military tuition benefit provision. Any person seeking the military tuition benefit must qualify for admission to UNC-CH and must file an application for the benefit with his or her admissions office before the first day of classes of the term for which he or she initially seeks the benefit. To remain eligible to receive the military tuition benefit, he or she must file another application for the benefit before the first day of classes of the first term in which he or she is enrolled in each academic year. The burden of proving eligibility for the military tuition benefit lies with the applicant for the benefit, and the application and all required supporting affidavits must be complete and in proper order before the first day of classes of the term in question. Because of the time involved in securing the necessary affidavits from the appropriate military authorities, prospective applicants for the military tuition benefit are urged to secure application forms from their admissions offices and begin the application process several weeks before the first day of classes of the term for which they seek the benefit.

Eligibility of Members of the Armed Services. Eligible members of the Armed Services pay a rate of tuition computed by applying a statutory formula which is dependent, in part, on the amount of money payable by their Service employer to them or to the institution by reason of their enrollment. Application of the statutory formula yields the following results: if the service member's education is being fully funded by the Service employer, the amount of tuition owed is equal to out-of-state tuition; if the member's education is not being funded by his or her Service employer, he or she pays an amount equal to in-state tuition; and if the Service employer is providing partial educational funding, the amount of tuition owed depends on the amount of funding contributed by the Service employer.

To be eligible for this military tuition benefit, the individual must

- a. be a member of the United States Air Force, Army, Coast Guard, Marine Corps, Navy, North Carolina National Guard, or a reserve component of one of these services; and
- b. be abiding in North Carolina incident to active military duty which is performed at or from a duty station in North Carolina.

Eligibility of Dependent Relatives of Service Members. If the service member meets the conditions set forth above, his or her dependent relatives may be eligible to pay the in-state tuition rate if they share the service member's North Carolina abode; if they have complied with the requirements of the Selective Service System, if applicable; and if they qualify as *military dependents* of the service member.

If the service member voluntarily ceases to live in North Carolina or is involuntarily absent from the state on military orders (other than absences on routine maneuvers and temporary assignments), he or she is deemed to have moved his or her abode from North Carolina. If a dependent relative of a service member has become eligible for the military tuition benefit and, after the beginning of the term of eligibility, the service member moves his or her abode from North Carolina, the dependent relative will continue to be eligible for the military tuition benefit only for the remainder of that academic year. An academic year runs from the first day of classes of the fall semester through the last day of exams of the following summer session, second term.

For a detailed explanation of the military tuition benefit provision (including an explanation of the formula used to compute the tuition rate for service members), a complete list of categories of persons who are considered "dependent relatives" for purposes of establishing eligibility for the military tuition benefit, and information about the registration requirements of the Selective Service System, applicants should consult *A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes* (as amended September 1985). This *Manual* is available for inspection in the Admissions Offices of the University. Copies of the *Manual* are also on reserve at the Robert B. House Undergraduate Library, and in the Reserve Reading Room of the Health Sciences Library.

¹The information in this section comes from three sources: (i) North Carolina General Statutes, §116-143.3, (ii) *A Manual to Assist the Public Higher Education Institutions of North Carolina in the Matter of Student Residence Classification for Tuition Purposes*, Revised September 1985, (iii) Chancellor's Rules and Procedures for Residence Classification of Students for Tuition Purposes and Determination of Eligibility for the Special Military Tuition Benefit.

Appeals of Eligibility Determinations of Admissions Officers. A student appeal of an eligibility determination made by any admissions officer must be in writing and signed by the student and must be filed by the student with that officer within fifteen working days after the student receives notice of the eligibility determination. The appeal is transmitted to the Residence Status Committee by that officer, who does not vote in that Committee on the disposition of such appeal. The student is notified of the date set for consideration of the appeal, and, on request of the student, he or she is afforded an opportunity to appear and be heard by the Committee.

Any student desiring to appeal a determination of the Residence Status Committee must give notice in writing of that fact to the Chairman of the Residence Status Committee within ten days of receipt of the Committee's decision. The Chairman will promptly process the appeal for transmittal to the State Residence Committee.

THE FAMILY EDUCATIONAL RIGHTS AND PRIVACY ACT

As a general rule, under the federal Family Educational Rights and Privacy Act (FERPA), personally identifiable information may not be released from a student's education records without his or her prior written consent. Exceptions to this rule are set out in the FERPA regulations and the FERPA policy of The University of North Carolina at Chapel Hill.

UNC-CH will disclose personally identifiable information from the education records of a student, without the student's prior written consent, to officials of another school or school system in which the student seeks or intends to enroll. UNC-CH will also disclose personally identifiable information from an enrolled student's education records, without the student's prior written consent, to officials of another school or school system in which the student is contemporaneously enrolled.

UNC-CH also makes public certain information that has been designated as "directory information": the student's name, address, telephone listing, date and place of birth, major field of study, class, enrollment status (full-time, half-time, or part-time), participation in officially recognized activities and sports, weight and height of members of athletic teams, dates of attendance, degrees and awards received, and the most recent previous educational agency or institution attended by the student. Examples of ways in which some of this information is made public include: names of students who receive honors and awards, who make the Dean's List, who hold offices, or who are members of athletic teams. The annual commencement program publishes the names of degree recipients. The University also publishes the *Campus Directory* annually, and some professional and graduate student groups publish directories of students in their departments or schools.

Students who do not wish to have any or all "directory information" made public without their prior consent, must send the Office of the University Registrar (CB# 2100, 105 Hanes Hall, The University of North Carolina at Chapel Hill) a signed and dated notice specifying items that are not to be published. To ensure that a listing for the student will not appear in the *Campus Directory*, this notice must be received by the Office of the University Registrar by the end of the registration period for the semester or session of first enrollment or, after an absence, of reenrollment. Such a notice will be honored until the student graduates, ceases to attend, or withdraws from the University unless the student notifies the Office of the University Registrar to the contrary in writing.

Students also have the right to inspect their "education records" as defined in the FERPA regulations. They may not inspect financial records and statements of their parents; confidential letters of recommendation placed in their education records before January 1, 1975 (with some exceptions); or confidential letters of recommendation placed in their education records after January 1, 1975, if they have waived their rights to inspect and review such letters.

A student who believes that information in his or her education records is inaccurate or misleading or violates his or her privacy or other rights may request that the institution amend the records, and, if the request is denied, he or she has the right to a hearing. If, after the hearing, the institution decides that the information is not inaccurate, misleading, or violative of privacy or other rights, the student has a right to place a statement in those records commenting on the information in question or giving the student's reasons for disagreeing with the institutional decision. The student may also place such a statement in his or her records in lieu of requesting a hearing. Complaints alleging violations of FERPA rights may also be filed with the U.S. Department of Education.

Questions about FERPA should be addressed to the Legal Adviser to the Special Assistant to the Chancellor (CB# 9150, 01 South Building). The text of FERPA and its regulations and the University's FERPA policy are also available for inspection in 01 South Building.

FIREARMS AND OTHER WEAPONS

The possession of any gun, rifle, pistol, dynamite cartridge, bomb, grenade, mine, explosive, bowie knife, dirk, dagger, slingshot, leaded cane, switchblade knife, blackjack, metallic knuckles, or any other weapons of like kind upon any University campus or in any University owned or operated facility is unlawful and contrary to University policy. Violation of this prohibition is a misdemeanor punishable by a fine not to exceed \$500 and/or six months' imprisonment, and may constitute a violation of the Campus Code.

IMMUNIZATION REQUIREMENT

Effective July 1, 1986, North Carolina State law requires that no person shall attend a college or university in North Carolina unless a certificate of immunization indicating that the person has received the immunizations required by the law is presented to the college or university on or before the first day of matriculation. Students enrolled at UNC-CH on July 1, 1986 are exempt from this requirement.

If the UNC-CH Medical History Form containing the certificate of immunization is not in the possession of the UNC-CH Student Health Service ten (10) days prior to the registration date, the University shall present a notice of deficiency to the person. The person shall have 30 calendar days from the first day of attendance to obtain the required immunizations. Those persons who have not complied with the immunization requirements by the end of 30 calendar days will be *administratively withdrawn* from the University.

The University of North Carolina at Chapel Hill

POLICY ON ILLEGAL DRUGS

I. INTRODUCTION

The Board of Trustees of The University of North Carolina at Chapel Hill, in conformity with the direction of the Board of Governors of The University of North Carolina, hereby adopts this Policy on Illegal Drugs, effective August 24, 1988. It is applicable to all students, faculty members, administrators, and other employees.

II. EDUCATION, COUNSELING, AND REHABILITATION

- A. The University of North Carolina at Chapel Hill has established and maintains a program of education designed to help all members of the university community avoid involvement with illegal drugs. This educational program emphasizes these subjects:
 1. The incompatibility of the use or sale of illegal drugs with the goals of the university;
 2. The legal consequences of involvement with illegal drugs;
 3. The medical implications of the use of illegal drugs; and
 4. The ways in which illegal drugs jeopardize an individual's present accomplishments and future opportunities.
- B. The University of North Carolina at Chapel Hill provides information about drug counseling and rehabilitation services available to members of the university community through campus-based programs and through community-based organizations. Persons who voluntarily avail themselves of university services are hereby assured that applicable professional standards of confidentiality will be observed.

III. ENFORCEMENT AND PENALTIES

- A. The University of North Carolina at Chapel Hill shall take all actions necessary, consistent with State and Federal law and applicable university policy, to eliminate illegal drugs from the university community. The University's Policy on Illegal Drugs is publicized in catalogs and other materials prepared for all enrolled and prospective students and in materials distributed to faculty members, administrators, and other employees.
- B. Students, faculty members, administrators, and other employees are responsible, as citizens, for knowing about and complying with the provisions of North Carolina law that make it a crime to possess, sell, deliver, or manufacture those drugs designated collectively as "controlled substances"

in Article 5 of Chapter 90 of the North Carolina General Statutes. Any member of the university community who violates that law is subject both to prosecution and punishment by the civil authorities and to disciplinary proceedings by the university. It is not "double jeopardy" for both the civil authorities and the university to proceed against and punish a person for the same specified conduct. *The university will initiate its own disciplinary proceeding against a student, faculty member, administrator, or other employee when the alleged conduct is deemed to affect the interests of the university.*

- C. Penalties will be imposed by the university in accordance with procedural safeguards applicable to disciplinary actions against students, faculty members, administrators, and other employees, as required by Section 3 of the Trustee Policies and Regulations Governing Academic Tenure in The University of North Carolina at Chapel Hill, by Section IIID of the Employment Policies for EPA Nonfaculty Employees of The University of North Carolina at Chapel Hill, by regulations of the State Personnel Commission, and the Disciplinary Procedure of the Staff Personnel Administration Guides (SPAG 37), by the Instrument of Student Judicial Governance, and by all other applicable provisions of the policies and procedures of The University of North Carolina at Chapel Hill.
- D. The penalties to be imposed by the university may range from written warnings with probationary status to expulsions from enrollment and discharges from employment. However, the following minimum penalties shall be imposed for the particular offenses described.

1. Trafficking in Illegal Drugs

- a. For the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedule I, N.C. General Statutes 90-89, or Schedule II, N.C. General Statutes 90-90 (including, but not limited to, heroin, mescaline, lysergic acid diethylamide, opium, cocaine, amphetamine, methaqualone), any student shall be expelled and any faculty member, administrator, or other employee shall be discharged.
- b. For a first offense involving the illegal manufacture, sale or delivery, or possession with intent to manufacture, sell or deliver, of any controlled substance identified in Schedules III through VI, N.C. General Statutes 90-91 through 90-94, (including, but not limited to, marijuana, anabolic steroids, pentobarbital, codeine), the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent.¹ For a second offense, any student shall be expelled and any faculty member, administrator, or other employee shall be discharged.

2. Illegal Possession of Drugs

- a. For a first offense involving the illegal possession of any controlled substance identified in Schedule I, N.C. General Statutes 90-89, or Schedule II, N.C. General Statutes 90-90, the minimum penalty shall be suspension from enrollment or from employment for a period of at least one semester or its equivalent.²
- b. For a first offense involving the illegal possession of any controlled substance identified in Schedules III through VI, N.C. General Statutes 90-91 through 90-94, the minimum penalty shall be probation, for a period to be determined on a case-by-case basis. A person on probation must agree to participate in a drug education and counseling program, consent to regular drug testing, and accept such other conditions and restrictions, including a program of community service, as the Chancellor or the Chancellor's designee deems appropriate. Refusal or failure to abide by the terms of probation shall result in suspension from enrollment or from employment for any unexpired balance of the prescribed period of probation.³

¹Employees subject to the State Personnel Act are governed by regulations of the State Personnel Commission. Because the minimum penalty specified in this Section and required by the Board of Governors exceeds the maximum period of suspension without pay that is permitted by State Personnel Commission regulations, the penalty for a first offense for employees subject to the State Personnel Act is discharge.

²Employees subject to the State Personnel Act are governed by regulations of the State Personnel Commission. Because the minimum penalty specified in this Section and required by the Board of Governors exceeds the maximum period of suspension without pay that is permitted by State Personnel Commission regulations, the penalty for a first offense for employees subject to the State Personnel Act is discharge.

³If this balance for an employee subject to the State Personnel Act exceeds three days, that employee shall be discharged.

THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

- c. For a second or other subsequent offenses involving the illegal possession of controlled substances, progressively more severe penalties shall be imposed, including expulsion of students and discharge of faculty members, administrators, or other employees.

E. Suspension Pending Final Disposition

When a student, faculty member, administrator, or other employee has been charged by the university with a violation of policies concerning illegal drugs, he or she may be suspended from enrollment or employment before initiation or completion of regular disciplinary proceedings if, assuming the truth of the charges, the Chancellor, or in the Chancellor's absence, the Chancellor's designee concludes that the person's continued presence within the university community would constitute a clear and immediate danger to the health or welfare of other members of the university community; provided, that if such a suspension is imposed, an appropriate hearing of the charges against the suspended person shall be held as promptly as possible thereafter.

IV. IMPLEMENTATION AND REPORTING

Annually, the Chancellor shall submit to the Board of Trustees a report on campus activities related to illegal drugs for the preceding year. The reports shall include, as a minimum, the following:

- (1) a listing of the major education activities conducted during the year;
- (2) a report on any illegal drug-related incidents, including any sanctions imposed;
- (3) an assessment by the Chancellor of the effectiveness of the campus program and;
- (4) any proposed changes in the Policy on Illegal Drugs.

A copy of the report shall be provided to the President, who shall confer with the Chancellor about the effectiveness of campus programs.

UNIVERSITY CALENDAR**1990-1991****Summer School, 1990****First Session**

May 21, Monday	Registration.
May 22, Tuesday	First day of classes.
May 23, Wednesday	Last day for late registration.
May 28, Monday	Holiday, Memorial Day.
May 29, Tuesday	Last day to drop a course for credit on student's financial account.
June 4, Monday	Last day to drop courses (undergraduates).
June 11, Monday	Last day to withdraw for credit on student's financial account.
June 18, Monday	Last day to drop courses (graduates).
June 22, Friday	Last day of classes.
June 25-26, Monday-Tuesday	Final examinations.

Second Session

June 28, Thursday	Registration.
June 29, Friday	First day of classes.
July 2, Monday	Last day for late registration.
July 4, Wednesday	Holiday, Independence Day.
July 6, Friday	Last day to drop a course for credit on student's financial account.
July 11, Wednesday	Last day to drop courses (undergraduates).
July 19, Thursday	Last day to withdraw for credit on student's financial account.
July 26, Thursday	Last day to drop courses (graduates).
August 1, Wednesday	Last day of classes.
August 2-3, Thursday-Friday	Final examinations.

Fall Semester 1990

August 27-29, Monday-Wednesday	Registration.
August 30, Thursday	Classes begin.
September 3, Monday	Holiday.
October 3, Wednesday	Fall recess begins at 5 p.m.
October 8, Monday	Classes resume at 8 a.m.
October 12, Friday	Last day for submitting an application for a degree and an application for admission to candidacy for the master's degree and last day for submitting an application for doctoral degree for December graduation.
October 12, Friday	University Day.
November 10, Saturday	Written examinations for master's candidates for December graduation may not be taken after this date.
November 21, Wednesday	Thanksgiving recess begins at 1 p.m.
November 26, Monday	Classes resume at 8 a.m.
November 27, Tuesday	Last day to drop a course.
December 7, Friday	Final signed copies of doctoral dissertations and master's theses for candidates for the December graduation must be filed in the Graduate School by this date.
December 11, Tuesday	Last class day.
December 12, Wednesday	Reading day.
December 13-20, Thursday-Thursday	Final course examinations.

Spring Semester, 1991

January 10, Thursday	Registration.
January 11, Friday	Classes begin.
January 21, Monday	Holiday, Martin Luther King, Jr.
February 6, Wednesday	Last day for submitting an application for a degree and an application for admission to candidacy for the master's degree and last day for submitting an application for doctoral degree for May Commencement.
March 8, Friday	Spring recess begins at 5 p.m.
March 18, Monday	Classes resume at 8 a.m.
March 23, Saturday	Written examinations for master's candidates for May Commencement may not be taken after this date.
March 29, Friday	Holiday, Good Friday.
April 12, Friday	Last day to <i>drop</i> a course.
April 26, Friday	Final signed copies of doctoral dissertations and master's theses for candidates for the May Commencement must be filed in the Graduate School by this date.
April 26, Friday	Last class day.
April 29, Monday	Reading day.
April 30-May 7, Tuesday-Tuesday	Final course examinations.
May 12, Sunday	Commencement.

Special Deadlines for Admission Applications

February 1	Last day for submitting application to qualify for fellowship or assistantship consideration for the Fall Semester.
July 1	Last day for submitting application for admission without aid for the Fall Semester if space is available.
October 15	Last day for submitting application for admission to the Spring Semester.

The University calendar does not recognize religious holidays. The faculty are encouraged to make reasonable accommodations for students requesting to miss class due to the observance of religious holidays.

Department of Statistics
The University of North Carolina at Chapel Hill
Chapel Hill, NC 27599-3260
Telephone: (919) 962-2307

Nonprofit Organization
U.S. Postage
PAID
Permit No. 177
Chapel Hill, NC 27599-1110