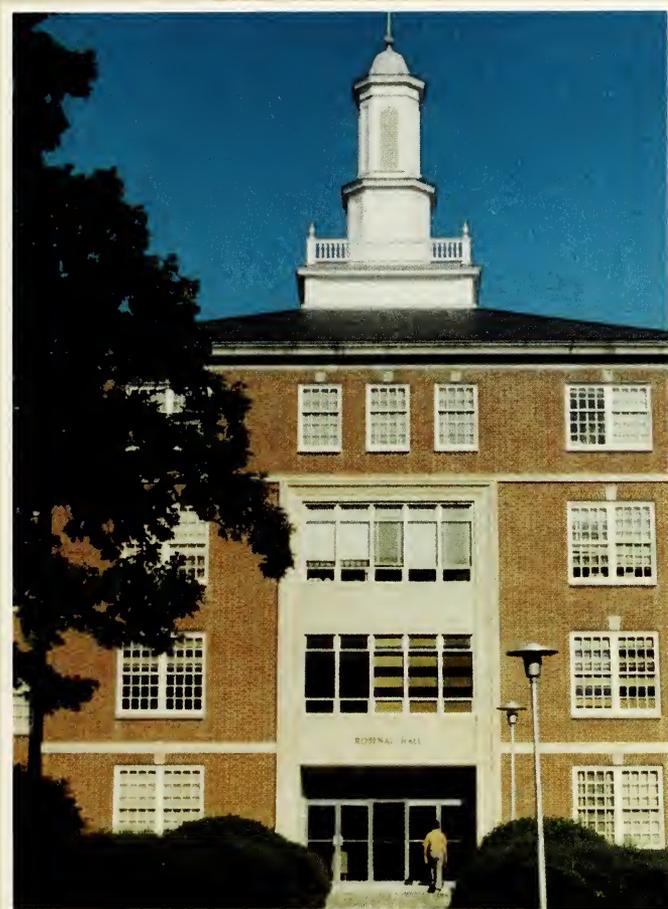


**Record of  
The University of North Carolina  
at Chapel Hill**



**School of  
Public  
Health**

1989-1991



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1989

# Record of The University of North Carolina at Chapel Hill



# School of Public Health

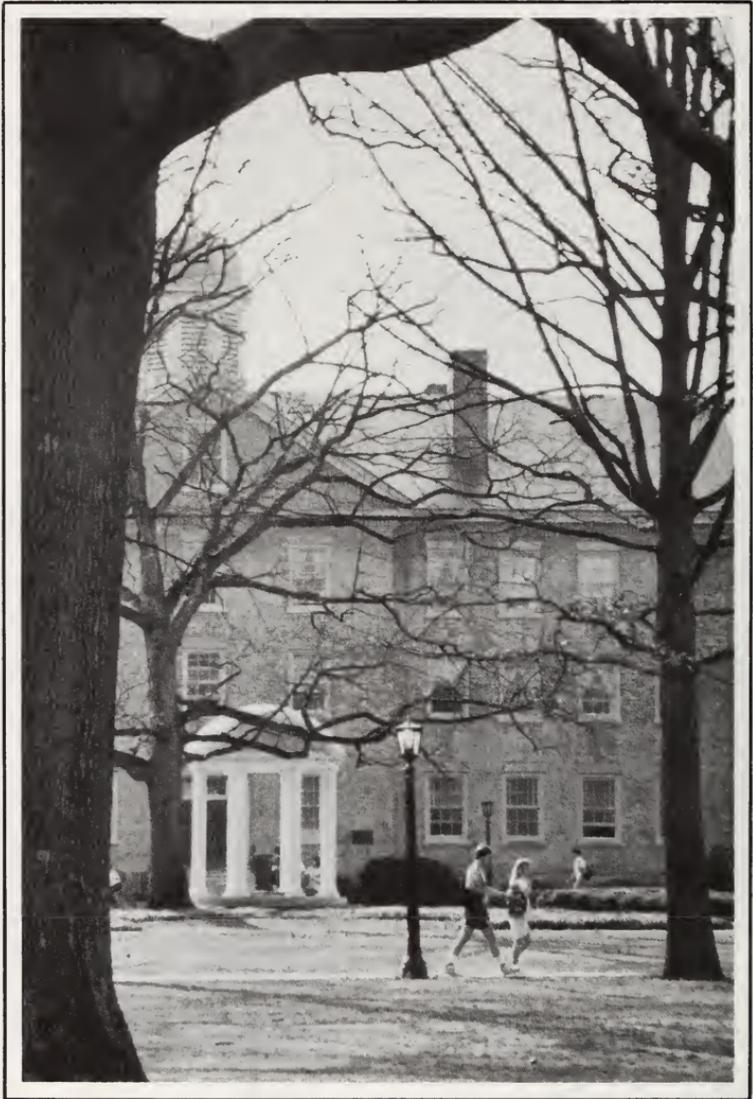
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announcements for the sessions 1989-1991  
the university of north carolina at chapel hill

1989-1991

(USPS 651-960)

Number 1029



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.



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# The University of North Carolina at Chapel Hill

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# Mission Statement

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.

April 25, 1986, as adopted by the Board of Trustees, The University of North Carolina at Chapel Hill

# University Calendar

1989-1990

## Summer School, 1989

### First Session

May 22, Monday	Registration.
May 23, Tuesday	First day of classes.
May 24, Wednesday	Last day for late registration.
May 29, Monday	Holiday, Memorial Day.
May 30, Tuesday	Last day to drop a course for credit on student's financial account.
June 5, Monday	Last day to drop courses (undergraduates).
June 12, Monday	Last day to withdraw for credit on student's financial account.
June 19, Monday	Last day to drop courses (graduates).
June 23, Friday	Last day of classes.
June 26-27, Monday-Tuesday	Final examinations.

### Second Session

June 29, Thursday	Registration.
June 30, Friday	First day of classes.
July 3, Monday	Last day for late registration.
July 4, Tuesday	Holiday, Independence Day.
July 7, Friday	Last day to drop a course for credit on student's financial account.
July 12, Wednesday	Last day to drop courses (undergraduates).
July 20, Thursday	Last day to withdraw for credit on student's financial account.
July 27, Thursday	Last day to drop courses (graduates).
August 2, Wednesday	Last day of classes.
August 3-4, Thursday-Friday	Final examinations.

## Fall Semester, 1989

August 23, Wednesday	Fall Semester opens.
August 26, Saturday	Residence halls open for freshmen and undergraduate transfer students at 10 A.M.
August 27, Sunday	Orientation of all new freshmen and undergraduate transfer students according to schedule to be announced.
August 28, Monday	Residence halls open for returning students.
August 28-30, Monday-Wednesday	Registration according to schedule to be announced.
August 31, Thursday	Classes begin for all students. Late registration begins. Fee charged for late registration.
September 4, Monday	Holiday, Labor Day.
September 7, Thursday	End of late registration and change in schedules. No registration accepted after this date.
September 14, Thursday	Last day to drop a course for credit on student's financial account.
October 11, Wednesday	Last day for dropping courses (undergraduates) and last day for Pass/Fail declarations.
October 12, Thursday	University Day.
October 13, Friday	Last day for both undergraduate and graduate students to file applications for degree to be awarded in December.
October 20, Friday	Fall Recess—Instruction ends 5 P.M.
October 25, Wednesday	Instruction resumes 8 A.M.
October 25, Wednesday	Progress Reports for freshmen due.
October 30-November 3, Monday-Friday	Pre-registration for Spring Semester.
November 1, Wednesday	Last day to withdraw for credit on student's financial account. Last day to withdraw without the semester being counted as a term in residence (undergraduates only).
November 11, Saturday	Written examinations for master's candidates for December graduation may not be taken after this date.
November 22, Wednesday	Thanksgiving Recess—Instruction ends 1 P.M.
November 27, Monday	Instruction resumes 8 A.M.
November 29, Wednesday	Last day for graduate students to drop a course.
December 1, 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 8, Friday	Fall Semester classes end.
December 11, Monday	Reading day.
December 12, Tuesday	Fall Semester examinations begin.
December 20, Wednesday	Fall Semester examinations end.

## Spring Semester, 1990

January 10, Wednesday	Spring Semester opens.
January 10 (noon), Wednesday	Residence halls open for new students.
January 11, Thursday	Residence halls open for returning students.
January 11-12, Thursday-Friday	Registration/schedule changes.
January 15, Monday	Holiday, Martin Luther King, Jr.
January 16, Tuesday	Classes begin for all students. Late registration begins. Fee charged for late registration.
January 22, Monday	End of late registration and change in schedules. No registration accepted after this date.
January 29, Monday	Last day to drop a course for credit on student's finan- cial account.
February 7, Wednesday	Last day for both undergraduate and graduate students to file applications with Dean for degree to be awarded in May.
February 26, Monday	Last day for dropping courses (undergraduates) and last day for Pass/Fail declarations.
March 9, Friday	Spring Recess—Instruction ends 5 P.M.
March 19, Monday	Instruction resumes 8 A.M.
March 19, Monday	Last day to withdraw for credit on student's financial account. Last day to withdraw without the semester being counted as a term in residence (undergradu- ates only).
March 24, Saturday	Written examinations for master's candidates for May graduation may not be taken after this date.
April 2-6, Monday-Friday	Pre-registration for summer and fall.
April 13, Friday	Holiday, Good Friday.
April 17, Tuesday	Last day for graduate students to drop a course.
April 26, Thursday	Spring Semester classes end.
April 27, Friday	Final signed copies of doctoral dissertations and master's theses for candidates for the May gradua- tion must be filed in the Graduate School by this date.
April 27, Friday	Reading day.
April 30, Monday	Spring Semester examinations begin.
May 8, Tuesday	Spring Semester examinations end.
May 13, Sunday	Commencement.



# University Information

## Admission

### Policies

The regular entrance requirements of the Graduate School must be met by all students applying for admission to the School of Public Health.

The applicant must hold the bachelor's or master's degree from an accredited college or university with a grade average of B or better in the major subject area and must present credentials showing the completion of prerequisite courses for the special field he or she proposes to undertake in a graduate program. Only applicants with academic records of high quality should seek admission. All applicants with less than a 3.0 average in the last two years of undergraduate work must take the Graduate Record Examination.

Work done in absentia will not be counted for graduate credit. However, in certain cases approved by the University Administration, part of the work on the thesis for a higher degree may be done elsewhere. All such work, even when credited, is subject to the final examination required for the degree.

All master's degrees are terminal degrees. To enroll in the doctoral program, the student must receive approval of the department and be readmitted to the Graduate School.

All new students, and all old students who have been out of the University for a full calendar year or more, must have a medical report submitted to and approved by the Director of the Student Health Service before their registrations may be effected. Those who arrive in Chapel Hill without completing these requirements must defray the costs of having the physical examination, laboratory examinations, and immunizations performed by the Student Health Service.

### Application

All applicants are required to pay a \$35.00 nondeductible, nonrefundable application fee to the Graduate School.

The program of study in the School of Public Health is arranged in a sequence which makes it advisable for students to enter the School in the fall semester. Admission at other times is granted only for exceptional reasons.

Letters of inquiry regarding admission and requests for application forms should be addressed to the Dean, School of Public Health, CB# 7400, Rosenau Hall, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-7400. It is advisable to apply for fall admission before February 1, although applications submitted as late as July 1 will be considered if space is available. To compete with heavy competition, applications and all supporting documentation should be received in the Graduate School by February 15.

An individual can be considered for a Graduate School Fellowship only when all materials are received by February 1. Information about School of Public Health traineeships, scholarships and other financial assistance appears on pages 30-31 of this catalog. Additional information can be obtained from the departments.

An applicant who has been offered admission reserves his or her place by payment of a \$25.00 nonrefundable enrollment deposit which is credited against the 1st semester tuition. Checks should be made payable to The University of North Carolina. Payment should be mailed directly to the University Cashier, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-1400, along with an Admission and Deposit Record. No payment should be sent either to the Graduate School, to the School of Public Health, or to the department of one's major. Due to the number of applicants, your place will not be held if this deposit is not received within three weeks of the date of the admission letter.

Students who make the deposit and who attend the University on a fellowship, traineeship, or other award which pays the entire cost of tuition and fees directly to the University may obtain refund of the deposit after November 1.

## Tuition and Fees<sup>1</sup>

Graduate tuition and fees per semester for bona fide residents of North Carolina are \$602.00. For out-of-state students, tuition and fees per semester are \$2,413.00. In addition, the following courses require field experience for which there is a fee:<sup>2</sup>

BIOS 191	\$ 25.00	HEED 340	\$125.00	NUTR 250	\$450.00
BIOS 302	\$450.00	HEED 341	\$125.00	NUTR 251	\$450.00
ENVR 164	\$175.00	HEED 342	\$125.00	NUTR 252	\$ 50.00
ENVR 165	\$200.00	HEED 343	\$125.00	PHNU 196	\$150.00
EPID 315	\$500.00	HPAA 90	\$200.00	PHNU 272	\$450.00
HEED 90	\$100.00	HPAA 206	\$450.00	PHNU 301	\$150.00
HEED 240	\$450.00	MHCH 214	\$350.00	PHNU 396	\$450.00

Undergraduate tuition and fees per semester for residents of North Carolina are: \$438.00; for out-of-state students, \$2,415.00.

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.

The curricula of certain of the departments extend through a summer period of 12 weeks. Tuition and fees for summer terms are prorated by number of hours taken. Maximum rates (9 hours or more) for each five and one half week period for graduate students are \$481.00 for in-state and \$2,292.00 for out-of-state students.

Thesis—0 credit hours (courses numbered 393–394) for in-state is \$300.00 and out-of-state is \$583.00 per semester or \$101.00 in-state and \$196.00 out-of-state per summer term.

<sup>1</sup>Tuition and fees are subject to change without notice. Amounts given are for semester system. Additional field fee courses may be established.

<sup>2</sup>For up-to-date information on field fees contact the Dean's Office, School of Public Health or department of choice.

## **Statutory Provisions Offering Lower Tuition Rates**

Legal residents of North Carolina who meet the requirements of N.C. Gen. Stat. §116-143.1 are entitled to pay a lower rate of tuition than nonresidents. Members of the armed services, and their qualifying dependent relatives, who are not North Carolina legal residents are also allowed to pay the lower tuition rate if they meet the requirements of N.C. Gen. State. §116-143.3. All students are responsible for being aware of the requirements concerning residence status. A full summary of information on these two provisions is set out in Appendix A.

## **Registration and Payment of Bills**

All students are expected to report for registration on the opening date of the fall semester.

Bills for the fall and spring semesters are payable at the University Cashier's Office no later than the first day of classes for each semester. Failure to pay as specified will result in the assessment of a late payment fee and possible disenrollment. This ruling does not apply to fellowship students or students who are sent by agencies.

## **Automobile Regulations**

Students at the University who own and/or operate a motor vehicle on campus, and are eligible for and desire campus parking privileges, may register their vehicles with the Traffic Office, "Y" Building, in order to secure and display on the vehicle a permit indicating eligibility for parking privileges.

For returning students, applications requesting motor vehicle parking permits must be submitted before the Spring Semester ends; these are processed and permits are issued during fall registration. Transfer and new students will be given an opportunity to register their automobiles or motorcycles during the fall registration. A check or direction to charge the student's account must accompany the application.

In addition, permits allowing unlimited rides on the Chapel Hill Transportation System buses may be purchased by the semester from the UNC Traffic Office, "Y" Building. Students wishing to use this bus system instead of paying for campus parking may park off campus in a perimeter lot for a small fee.

Bus schedules and a complete set of rules and regulations governing parking and traffic will be furnished to each student at the time a parking permit is issued.

## **Student Services**

### **Housing**

Student housing is an integral part of the educational program. The primary objective of the Department of University Housing is to provide a physical and psychological atmosphere which allows the student to develop to the utmost his or her personality, ability, and sensitivity. The University maintains residence hall space in 30 buildings for more than 7,200 registered students—undergraduate, graduate and professional men and women. Three hundred and six apartments are available for students with dependents.

Information regarding residence hall accommodations is available by writing to: Department of University Housing, Contracts Office, Carr Building 103-A, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-5500.

Information regarding married student housing is available by writing to: Manager, UNC Family Student Housing, Odum Village, Branson Street, Chapel Hill, North Carolina 27599-5500.

Nearly 800 women and 700 men are housed in privately owned Granville Towers, which is located just off the UNC-CH campus about one block from the Carolina Inn. These supervised residence halls have a cafeteria dining commons. The fee charged includes room and board. Information is available from Granville Towers, University Square, Chapel Hill, NC 27514-6201. Arrangements for these accommodations should be made directly with Granville Towers Business Office.

## Student Health

The University offers a comprehensive program of health care for its student body and provides a Student Health Service with both inpatient and outpatient facilities.

The Health Service is staffed with physicians, psychiatrists, clinical psychologists, counselors, health educators, and a full nursing complement. In addition to programs for physical and mental health, there is also a sports medicine program.

When a student is admitted to the infirmary, he is not charged for services rendered by the staff. He is, however, required to pay for any additional service—surgery, consultations, special nurses, etc.—recommended by the attending physician. See the Graduate School Catalog for additional information.

The University also provides the opportunity to purchase supplemental hospitalization insurance through a group program which provides coverage for married students and their families as well as for single students.

## Recreation

The University gymnasias, swimming pools, tennis courts, golf course, and large athletic fields provide ample facilities for exercise and recreation. All are under the supervision and direction of a well-organized Department of Physical Education.

## Alcoholic Beverages

**A policy on student possession and consumption of alcoholic beverages in facilities of The University of North Carolina at Chapel Hill has been promulgated by the Vice Chancellor for Student Affairs, with the approval of the Chancellor, to inform students of the conditions under which alcoholic beverage use consistent with Federal, State, and local laws and ordinances is permitted in University facilities and on University property. Copies of the policy may be obtained from the Office of the Dean of Students or the Associate Vice Chancellor for Student Affairs; both are located in Steele Building.**

## Drug Policy Statement

See Appendix A.

## **Smoking**

Beginning on November 1, 1988, a no smoking policy was instituted for ALL School facilities which include ALL areas (classrooms, hallways, elevators, restrooms, lounges, and private offices). This ban prohibits the use of all tobacco products, including cigarettes, cigars, and pipes.

## **Libraries**

The Health Sciences Library is situated across the street from the School of Public Health. Reference librarians are available during almost all of the library's service hours to aid users in locating information, to instruct in the use of the library's resources, and to provide additional research assistance. Automated reference services, including access to MEDLINE and over forty other data bases, are also available for on-line bibliographic searching.

Other library facilities include the various departmental and school libraries and the general University Library.

## **University Career Planning and Placement Services**

The office of University Career Planning Services (UCPPS) helps UNC-CH students and alumni plan their chosen careers and search for employment. Major services include: 1) on-campus interviews with representatives from business and industry, government, educational institutions, and nonprofit organizations; 2) job referrals; 3) job vacancy notebooks; 4) credentials mailing; 5) career and employer literature; 6) summer employment and internship assistance; and 7) individual career advising. Workshops on career planning, job-seeking, resume writing, and interviewing are given throughout the year, and a videotaped practice interview program is offered.

UCPPS publishes a guide to the job-seeking process and provides access to printed and audiovisual resources covering the job search and potential employing organizations of all kinds. Counselors are available to help individuals increase awareness of job opportunities, develop job-seeking strategies, and improve interviewing techniques. Counselors will also critique resumé and provide assistance with other job search concerns.

Currently enrolled students may use the resources of UCPPS free of charge. To register for the job referral and credentials mailing services, a student must have completed 30 hours of course work. University Career Planning and Placement Services is located in 211 Hanes Hall (phone 962-6507). Office hours are 8:00 a.m.-4:30 p.m. Monday through Friday.



# School of Public Health

## Dean's Office

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*Dean*

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*Associate Dean for Administration*

**Robert B. Moorhead, B.A., M.P.A.**  
*Associate Dean for Computing and Information Services*

<sup>1</sup>**Donald L. Fox, B.S., Ph.D.**  
*Associate Dean for Academic Programs*

<sup>2</sup>**Donald T. Lauria, B.C.E., M.S.S.E., Ph.D.**  
*Associate Dean for Academic Programs*

**Richard M. House, B.S., M.P.H., Ed.D.**  
*Associate Dean for Community Health Service*

**James R. Summers, B.S., M.S.P.H.**  
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*Assistant Dean of Students*

**Harriet H. Barr, B.A., M.P.H.**  
*Assistant Dean for Public Relations and Alumni Affairs*

**Gail C. Gibbs**  
*Assistant to the Dean*

<sup>1</sup>*Appointed Associate Dean October 17, 1988*

<sup>2</sup>*Resigned as Associate Dean July 1, 1988*



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*Professor of Maternal and Child Health*

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*Professor of Parasitology and Laboratory Practice*

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## Dean's Cabinet

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*Dean of the School of Public Health and Professor of Epidemiology*

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*Chair and Professor of Environmental Sciences and Engineering*

**<sup>1</sup>Donald L. Fox, B.S., Ph.D.**

*Associate Dean for Academic Programs and Professor of Air Hygiene*

**Richard House, B.S., M.S.P.H., Ed.D.**

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*Chair and Professor of Health Policy and Administration*

**<sup>2</sup>Milton E. Kotelchuck, B.A., M.A., M.P.H., Ph.D.**

*Chair and Associate Professor of Maternal and Child Health*

**<sup>3</sup>Donald T. Lauria, B.C.E., M.S.S.E., Ph.D.**

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*Chair and Professor of Health Behavior and Health Education*

**Courtney Colvard and Cheryl Lachman, Co-chairs, Student Union**

<sup>1</sup>Appointed Associate Dean October 17, 1988

<sup>2</sup>Appointed Chair July 1, 1988

<sup>3</sup>Resigned as Associate Dean July 1, 1988



## General Information

The School of Public Health was organized in 1936 as a division within the School of Medicine at The University of North Carolina. Separate status as a school of public health was granted in 1939 and the first graduate degrees awarded in 1940. The fourth school of public health in the nation, the UNC School of Public Health was the first such school established within a state university.

It is today, with the Schools of Medicine, Dentistry, Nursing and Pharmacy, a unit of the Division of Health Affairs. The original departments of the School were Epidemiology, Parasitology (changed in 1968 to Parasitology and Laboratory Practice), Public Health Administration (changed to Health Administration in 1969 and to Health Policy and Administration in 1982), and Sanitary Engineering (changed in 1962 to Environmental Sciences and Engineering). Four additional departments (Biostatistics, Health Behavior and Health Education, Maternal and Child Health, Nutrition) and one curriculum (Public Health Nursing) are currently operating. All departments and curricula participate in research in a variety of areas and in field service to the state, region and the nation.

In addition to the departments and curriculum, two divisions operate within the School. The Division of Community Health Service extends the service capabilities and promotes the School's commitment to community service as its public responsibility. The Division of Computing and Information Services serves the computing and information management needs of faculty, staff, and students in administration, education and research.

The mission of the School is to advance and apply knowledge drawn from all sciences to the understanding and promotion of the health of human populations and to assist people in translating this knowledge into reality in their own lives whatever their culture or living conditions. The mission is realized through the education of students to assume professional positions, through providing continuing education opportunities for professionals and the public, through consultation and technical assistance to health and human service agencies and communities, through conducting applied and basic research, and through innovative demonstration programs.

The School of Public Health is one of twenty-four such schools in the United States accredited by the Council on Education for Public Health. The Curriculum of Public Health Nursing is accredited by the National League for Nursing, the programs in air and industrial hygiene and water resources engineering in the Department of Environmental Sciences and Engineering by the Accreditation Board for Engineering and Technology, and the Department of Health Policy and Administration by the Accrediting Commission of Education for Health Service Administration.

Degrees offered by the School of Public Health include an undergraduate degree (BSPH); the graduate academic degrees of Master of Science (MS); and Doctor of Philosophy (PhD); and the graduate professional degrees of Master of Public Health (MPH), Master of Science in Public Health (MSPH), Master of Science in Environmental Engineering (MSEE), and Doctor of Public Health (DrPH). All requirements of the graduate professional degrees are administered by the faculty of the School of Public Health with the approval of the Administrative Board of the Graduate School.

Close affiliations are maintained with other graduate schools and departments of the University of North Carolina campuses, as well as with other schools and universities, health and human services agencies and research organizations. These affiliations are local, statewide, national, and international in scope. The nature of the affiliations includes joint sponsorship and effort in teaching and research programs, joint faculty appointments, and establishment of field training centers for students in a number of official and voluntary international, federal, state and local health and human service organizations.

The School of Public Health has an active recruitment program for minorities. Students in the School of Public Health have the same rights and privileges accorded all students at The University of North Carolina at Chapel Hill. They may take courses in other departments of the University, North Carolina State University, and Duke University provided they are properly qualified and have the approval of their faculty advisers. Certain courses in chemistry, biochemistry, microbiology, economics, education, political sciences, social work, sociology, anthropology, and statistics have an especially close relationship to public health.

The School of Public Health admits only those students who would be expected to profit most by the educational program offered. It reserves the right to limit the number of students admitted to any course and drop from the roll any student whose work is unsatisfactory for any reason. It will be assumed that all applicants have assented to these conditions.



## Academic Information

### Degrees Offered

The School of Public Health offers one undergraduate degree, Bachelor of Science in Public Health, and six graduate degrees: Master of Public Health, Master of Science in Public Health, Master of Science, Master of Science in Environmental Engineering, Doctor of Philosophy, and Doctor of Public Health. Degrees are awarded in May, August, and December, although formal commencement exercises are held only in May. Any student who desires to proceed in a doctoral program must be recommended to the Graduate School by his/her major department and be readmitted.

The general description of requirements for each degree follows. Explanation of the various programs of study in the different areas of specialization is found under the heading of each department in a later section in the catalog. Courses and programs described in this catalog have been approved by the University faculty and administration as of January 20, 1988. For full current information contact the department or curriculum involved.

### Bachelor of Science in Public Health

The undergraduate degree programs of the School of Public Health lead to a Bachelor of Science in Public Health (BSPH) degree. Students wishing to obtain the BSPH degree typically spend two years in the General College of the University of North Carolina at Chapel Hill (or in equivalent academic study elsewhere) and two subsequent years under the administration of the School of Public Health. A few persons with a prior bachelor's degree may also be admitted each year to study for the BSPH degree. Interested persons may obtain admission applications and additional information from the Registrar's Office, CB# 7400, 138 Rosenau Hall, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-7400, or by calling (919) 966-2499.

Since enrollment in the BSPH degree programs is limited, completion of the prescribed freshman-sophomore prerequisites does not assure the student a position in the School of Public Health in the junior or a later academic year. Student selections are made, typically in the latter half of the sophomore year of course-work, on a *competitive* basis with consideration of academic achievement and personal qualifications.

The undergraduate public health degree programs combine features of a broad-based education with study in the professional area of public health. These programs seek to prepare individuals for professional positions in health and related fields, to provide a firm base for later graduate study, and to provide for general enrichment of the future lives of the students.

There are five BSPH degree program majors: *Biostatistics*, *Environmental Protection*, *Health Behavior and Health Education*, *Health Policy and Administration*, and *Nutrition*.

The *Biostatistics* major gives students preparation in application of quantitative knowledge to a variety of health and related matters dealing, for example, with the physical environment; the population; patterns of disease, disability, and death, and the costs and effects of health services. Course-work in mathematics is a prerequisite for this major.

The undergraduate *Environmental Protection* major emphasizes protection of the environment and prevention of diseases caused by environmental contaminants. Course-work in biology, chemistry and physics is expected before admission to the program. Seniors in this major are encouraged to develop a course-work concentration in one branch of the environmental sciences.

The undergraduate *Health Behavior and Health Education* major is concerned with ways to help people of diverse backgrounds improve their well-being in the most healthful way. Special attention is given to the role of community organization. Courses in psychology, anthropology, and sociology are desirable prerequisites for this major. This course-work in the program includes an extended period of field training in which students may help plan, conduct, and evaluate educational programs for professional and lay groups in a variety of settings.

The undergraduate major in *Health Policy and Administration* prepares students to (1) assume positions requiring basic administrative operational skills in such areas as financial management, supervision, planning, and general administration and (2) pursue graduate study in a variety of fields, including health, business and public administration, law, social work and medicine. Basic economics and accounting courses are prerequisites for this major. Summer field placements for the students may be in a hospital, nursing home, public health department, or other similar organizations.

The *Nutrition* undergraduate major emphasizes the relationship between nutrition and health. This program is designed to meet the educational objectives of students with at least two alternative career goals; (1) entry level positions in community nutrition and dietetics, and (2) preprofessional study for careers in medicine, dentistry, and other health fields. Basic courses in biology and chemistry are prerequisites for admission.

### Degree Programs Offered In School of Public Health

	BSPH	MPH	MSPH	MS	MSEE	DrPH	PhD
Biostatistics	■	■		■		■	■
Environmental Sciences and Engineering	■	■	■	■	■		■
Epidemiology		■	■			■	■
Health Policy and Administration	■	■	■			■	■
Health Behavior and Health Education	■	■	■			■	■
Maternal and Child Health		■	■			■	
Nutrition	■	■				■	
Parasitology and Laboratory Practice		■	■			■	■
Public Health Nursing		■		■			

Requirements for the BSPH degree are as follows:

1. At least 120 semester hours of courses, not counting physical education activities courses. A 2.0 (C) average on all work attempted at the University of North Carolina at Chapel Hill. The last 30 hours of degree credit taken in residence in Chapel Hill.
2. A freshman-sophomore pattern of approximately 60 semester hours of courses, which must include:
  - a. English 1, 2
  - b. Course-work through Foreign Language 3 (or placement credit in Foreign Language 4), with no graduation credit given for Foreign Language 1 of the high school foreign language.
  - c. Two courses from the Mathematical Sciences option of the General College of the University.
  - d. Biology 11, 11L and an additional acceptable Natural Sciences Perspective course.
  - e. Two acceptable Social Sciences Perspective courses (from two different departments).
  - f. Two acceptable Aesthetic Perspective courses (one in literature and one in fine arts).
  - g. One acceptable Philosophical Perspective course.
  - h. Two acceptable Western Historical/Non-Western/Comparative Perspective courses, including one covering a period of Western History before 1700.
  - i. Two physical education activities courses.
3. A junior-senior total of approximately 60 semester hours to include Biostatistics 101 (or 105 or 115), Environmental Sciences and Engineering 51, Epidemiology 160, 160L, and a minimum of three electives outside the School of Public Health.
4. A satisfactory major in one of the five fields of concentration.

For additional information and specific requirements for each area of concentration see *The Undergraduate Bulletin* of the University.

#### Note

The minimum undergraduate admission requirements to begin with the fall 1988 semester are:

- A high school *diploma* or its equivalent;
- Four (4) course units in college preparatory *English*;
- Three (3) course units in *mathematics*, including geometry, algebra I, and algebra II;
- Two (2) course units in *social studies*, including one (1) unit in U.S. history and one (1) unit in government and economics;
- Three (3) course units in *science*, including at least one (1) unit in a life or biological science and at least one (1) unit in a physical science, and including at least one (1) laboratory course.
- At least two (2) course units in one foreign language.

It is recommended that prospective students take one (1) foreign language course unit and one (1) mathematics course unit in the twelfth grade.

## Master of Public Health

The program is designed to prepare students for positions which require a considerable breadth of knowledge of the whole field of public health but a lesser degree of specialization in one area. Thus students in this program may take nearly half of their courses outside the major department or curriculum, and will undergo extensive field training if previous experience is not deemed sufficient by criteria set by the student's department or curriculum. Typically, Master of Public Health students will have already acquired education in a health or health related profession, or have at least three years of experience in a field germane to public health.

The Master of Public Health degree is predominantly a terminal degree, but qualified students may proceed in the School of Public Health to a DrPH program for advanced study and further qualification.

### *Field of Specialization*

Programs of study leading to the Master of Public Health degree are offered by all departments and curricula in the School. Detailed descriptions are found in the sections describing the program areas in this catalog.

### *Requirements for Admission*

1. a. A prior doctoral degree (such as MD, DVM, DDS, JD, or equivalent) from approved schools. Other doctoral degrees from approved schools may also qualify the applicant, depending upon the department to which application is being made and the relevance of the background to the department's field; or  
b. A prior master's degree (professional or academic) from approved schools provided the prior training is relevant to the basic field of the department or curriculum to which the student is applying as determined by the policies of that department or curriculum; or  
c. A bachelor's degree from approved schools, including a strong undergraduate record overall, with an average grade of B or better in the subject of the major. The course content should meet the policies of the department or curriculum to which the student is applying. Some departments/curricula require specific tests such as the GRE of applicants. Applicants with less than a B average in the subject of the major must take the GRE test.
2. In most departments or curricula, the applicant must have had relevant experience in a health related agency or organization prior to matriculation. Established policy may credit experience prior to admission by reducing the length of the program or permitting a waiver for field training. The extent and nature of required field training is also subject to established policy of the program area.
3. Special additional requirements by departments or curricula, as specified.

### *Requirements for the Degree*

1. **Residence:** No less than two semesters are required, but a more extended period for majors in various programs may be needed. For those students in joint programs with selected other professional schools on this campus which have been approved by the Graduate School, credit toward one semester

of residence may be obtained by enrolling in and receiving credit for at least fifteen semester hours (usually five courses) in the School of Public Health while registered in the other school. Students attempting to obtain the MPH degree simultaneously with another graduate school degree must register full time in the School of Public Health for at least one semester.

2. **Course Requirements:** Candidates for the MPH degree shall meet each of the following three sets of course requirements; any course which partially satisfies two requirements may simultaneously be used for both.
  - a. *Depth.* Each candidate shall successfully complete a major in one of the departments or curricula of the School, by satisfying whatever requirements that department or curriculum may set.
  - b. *Breadth.* Each candidate shall successfully complete at least four health-related courses in at least three different departments or curricula other than the major. No portion of this requirement may be waived.
  - c. *Specifics.* Each candidate shall successfully complete
    - (1) at least one course in the Department of Biostatistics,
    - (2) at least one course in the Department of Epidemiology,
    - (3) a basic course covering the physical, biological, and/or social/behavioral factors which affect the health of the community, and
    - (4) at least one course relevant to health services delivery systems: except that any of these courses may be waived on the basis of a suitable display of proficiency, as approved by the candidate's adviser and the instructor of the course concerned.
3. **Admission to Candidacy:** An application for admission to candidacy which includes the total course program and title of written report (see below) must be filed with the Graduate School about three months before the expected date of graduation. The specific deadline is given in the calendar of events in this catalog.
4. **Substitutes for the Master's Thesis:** Candidates for the MPH, MSPH, and MSEE degrees who do not write a Master's Thesis must write a Master's Paper as a substitute. The School of Public Health has specified the following guidelines for this substitute.
  - a. The Master's Paper should show some synthesis of knowledge, and advance or contribute to the (appropriate specialized area of the) field of Public Health.
  - b. In connection with the Master's Paper, each candidate will register for at least one hour of credit in XXXX 392 (where XXXX is the department or curriculum acronym), or some other course approved for this purpose by the School.
  - c. Each Master's Paper must be approved by at least two members of the Graduate Faculty. The candidate will submit the paper to the department or curriculum, including a title page showing the approving signatures, in accordance with the University calendar.
  - d. Approved Master's Papers will be kept at least five years in a public file (usually in the Departmental Library or Reading Room).
5. **A Supervised Field Training** lasting 6 to 12 weeks, or a practicum within the department or curriculum. Policy of the program may permit this requirement to be waived on grounds that
  - a. the student has had adequate prior supervised experience in the application of the methodology of his specialty, and,

- 
- b. the student has substituted a satisfactory learning experience which clearly serves his or her educational goals better than field training or a practicum would.
  6. **Final Written or Oral Examination:** The examination must be taken at least one month before the degree is expected. The specific deadline is given in the calendar of events in this catalog. The focus is on work taken in the major department or curriculum; but, depending on the program policy, it may extend to other scientific and professional areas in which a department or curriculum would expect its students to be knowledgeable.
  7. **Time Limitation:** All requirements of the degree must be completed within five years from the time the student first matriculated in the program.

## Master of Science in Public Health

The Master of Science in Public Health program is designed to prepare students for professional careers in specialized areas of public health. Thus, its students will take courses mainly in one major department or curriculum of the School of Public Health, although there are also core requirements which provide for orientation to a broader view of public health. The Master of Science in Public Health degree is usually terminal, but it and the Master of Science degree, more than the Master of Public Health, tend to be the precursor to a doctoral program.

### *Fields of Specialization*

Programs of study leading to the Master of Science in Public Health degree are offered by the following departments: Environmental Sciences and Engineering, Epidemiology, Health Behavior and Health Education, Health Policy and Administration, Maternal and Child Health, and Parasitology and Laboratory Practice. Descriptions of these programs are found in the sections describing the departments in this catalog.

### *Requirements for Admission*

1. A bachelor's degree from an approved school in a program that included course content as prescribed by approved policies of the department to which the student is applying;
2. A strong undergraduate record overall, with an average grade of B or better in the subject of the major. Some departments require specific tests such as the GRE of all applicants. Applicants with less than a B average in the subject of the major must take the GRE test.
3. Special additional and/or more stringent requirements by departments, as specified.

### *Requirements for the Degree*

1. **Residence:** A minimum period of residence of not less than two semesters is required. However, most students will need more time to satisfy the course requirements in specific programs. Students attempting to obtain the MSPH simultaneously with another Graduate School degree must register full time in the School of Public Health for one semester.

## 2. Course Program:

- a. Within the minimum of 30 semester hours needed for graduation in each department, each candidate shall successfully complete:
  - (1) at least one course in the Department of Biostatistics,
  - (2) at least one course in the Department of Epidemiology,
  - (3) a basic course covering the physical, biological, and/or social/behavioral factors which affect the health of the community, except that any of these courses may be waived on the basis of a suitable display of proficiency, as approved by the candidate's advisor and the instructor of the course concerned.
- b. In addition, each candidate shall complete at least 15 semester hours in the specialized field as specified by the department.
3. **Admission to Candidacy:** An application for admission to candidacy which includes the total course program and title of written report (see below) must be filed with the Graduate School about three months before the expected date of graduation. The specific deadlines given in the calendar of events in this catalog.
4. **Substitutes for the Master's Thesis:** Candidates for the MPH, MSPH, and MSEE degrees who do not write a Master's Thesis must write a Master's Paper as a substitute. The School of Public Health has specified the following guidelines for this substitute.
  - a. The Master's Paper should show some synthesis of knowledge, and advance or contribute to the (appropriate specialized area of the) field of Public Health.
  - b. In connection with the Master's Paper, each candidate will register for at least one hour of credit in XXXX 392 (where XXXX is the department acronym), or some other course approved for this purpose by the School.
  - c. Each Master's Paper must be approved by at least two members of the Graduate Faculty. The candidate will submit the paper to the department, including a title page showing the approving signatures, in accordance with the University calendar.
  - d. Approved Master's Papers will be kept at least five years in a public file (usually, in the Departmental Library or Reading Room).
5. **Final Written or Oral Examination:** The examination must be taken at least one month before the degree is expected. The specific deadline is given in the calendar of events in this catalog. The focus is on work taken in the major department; but, depending upon departmental policy, it may extend to other scientific and professional areas in which a department would expect its students to be knowledgeable.
6. **Time Limitation:** All requirements of the degree must be completed within five years from the time the student first matriculated in the program.

## Master of Science

Programs of study leading to this degree are offered in the Departments of Biostatistics, Environmental Sciences and Engineering, and the Curriculum in Public Health Nursing.

For guidelines on this degree program, the reader should refer to sections on the relevant departments and curricula, brochures produced by these programs, and the catalog of the Graduate School.

## Master of Science in Environmental Engineering

The curriculum leading to this degree is designed to prepare graduates for careers in the environmental engineering profession, with special emphasis on water resources and air and industrial hygiene. Specifically, those awarded this degree are prepared for professional work with private firms of consulting engineers; with public agencies at the national, state, regional, and local levels of governments; and with a variety of industrial organizations.

### *Requirements for Admission*

Candidates for this degree must hold an engineering degree from an institution accredited by the Accreditation Board for Engineering and Technology or from an equivalent foreign institution—preferably in civil, environmental or sanitary, chemical, or mechanical engineering—where the curriculum has involved fundamental work in chemistry, physics, mathematics, and the engineering sciences.

### *Requirements for the Degree*

1. **Residence.** A minimum of one calendar year (12 months) of residence for students who have graduated with a strong record from approved engineering schools.
2. **Course Program.** Upon admission, students are required to develop a program of courses in consultation with their academic advisers. The program must include sufficient breadth to satisfy minimum course requirements described elsewhere in this catalog. For all students, a minimum of 30 graduate credits is required.
3. **Admission to Candidacy.** Students must file an application with the Graduate School for admission to candidacy about three months before the expected



date of graduation. The specific deadlines are given in the calendar of events in this catalog.

4. **Substitutes for the Master's Thesis:** Candidates for the MPH, MSPH, and MSEE degrees who do not write a Master's Thesis must write a Master's Paper as a substitute. The School of Public Health has specified the following guidelines for this substitute.
  - a. The Master's Paper should show some synthesis of knowledge, and advance or contribute to the (appropriate specialized area of the) field of Public Health.
  - b. In connection with the Master's Paper, each candidate will register for at least three hours of credit in XXXX 392 (where XXXX is the department acronym), or some other course approved for this purpose by the School.
  - c. Each Master's Paper must be approved by at least two members of the Graduate Faculty. The candidate will submit the paper to the department, including a title page showing the approving signatures, in accordance with the University calendar.
  - d. Approved Master's Papers will be kept at least five years in a public file (usually, in the Departmental Library or Reading Room).
5. **Final Oral Examination.** About one month before the expected date of graduation, students are given a final oral examination which focuses on their program of study, including the written report. Deadlines are announced in the Department of Environmental Sciences and Engineering.
6. **Time Limitation.** All requirements for the degree must be completed within five years of the time the student matriculated in the program.

## Doctor of Public Health

The Doctor of Public Health (DrPH) program provides professional training to prepare persons for the effective conduct or supervision of research, usually of an applied nature, and the integration of new knowledge and techniques into community and/or public health practice. Graduates are typically employed by operating community or public health programs at the local, state, national or international levels.

### *Fields of Specialization*

Programs leading to the Doctor of Public Health degree are offered by the Departments of Biostatistics, Epidemiology, Health Behavior and Health Education, Health Policy and Administration, Maternal and Child Health, Nutrition, and Parasitology and Laboratory Practice.

### *Requirements for Admission*

A prior master's or doctoral degree in public health or a related field is generally required. However, students in MPH or MSPH programs at the School may be admitted to the DrPH program without formally acquiring the master's degree, provided they satisfy all course requirements for the MPH degree.

At least 12 months of significant experience in public health is also required, but this may be included as part of the DrPH program before formal admission to candidacy.

## *Requirements for the Degree*

1. **Time:** A minimum of two academic years of course work and directed research, including at least two semesters of full-time continuous residence. This must be in addition to any time needed for satisfying the requirements for admission to the program. Students attempting to obtain the DrPH degree simultaneously with another Graduate School degree must register full time in the School of Public Health at least two semesters.
2. **Course Program:** A minimum of 18 semester hours of course work beyond the master's degree over and above MPH core courses are required for admission to candidacy and dissertation and research courses. The specific courses to be taken and number of credits will depend upon the qualifications and field of interest of the individual students. However, inasmuch as acquisition of this degree requires broad knowledge, students will of necessity take courses outside of their own department from within the School of Public Health, other parts of the University, or in other universities.
3. **Doctoral Committee:** Individual departments may, at the early stage of the program, establish a group of course advisers to direct and supervise the student's course work. The group may later become the dissertation committee. The doctoral student should play a significant role in selecting members of the committee.

The dissertation committee shall consist of no fewer than five members, one of whom shall be named chair, and at least three of whom shall be full members of the Graduate Faculty. Others may be limited members of the Graduate Faculty or "special appointees" approved by the Graduate School. Committee members shall be nominated by the director of the departmental doctoral program using the "Recommendation for Composition of Doctoral Dissertation Committee" form which must be transmitted via the School of Public Health's Associate Dean for Academic Programs to the Graduate School for approval. This committee will examine and approve the dissertation prospectus, either as part of the first doctoral oral examination or subsequent to it; consult with the student throughout the progress of the research; and participate in the final oral examination.

Doctoral committees and students are encouraged to include scholars from outside the program to serve as members of doctoral committees. The outside members may be selected from faculty from other departments of the University, or other institutions where scholarly work is conducted.

Each doctoral student is expected to consult with members of the dissertation committee at frequent intervals throughout the progress of his or her research and submit a progress report to each member of the committee at least once a year.

4. **Examinations:** When students have completed their course work or are in the final stage of their course programs and have satisfied other conditions for admission to candidacy, they are eligible to take the comprehensive doctoral examination. This consists of an oral and a written examination, both conducted by a committee which may or may not be the same as the dissertation committee. The interval between the two examinations should be short. The examinations are taken in the order determined by the committee and should cover all work in the student's major and minor fields of study. In addition to testing the student's knowledge, the committee may at the time

of the oral examination determine the appropriateness and feasibility of the dissertation topic or hold additional examinations for this purpose at a later date.

The oral examination to examine and approve the dissertation prospectus must be conducted by at least five members of the dissertation committee, at least three of whom shall be full members of the Graduate Faculty.

If the student fails either examination he or she may not take the examination a second time until at least three months have elapsed. A student who fails either examination twice becomes ineligible to continue graduate study.

5. **Admission to Candidacy:** Prior to admission to candidacy, students must have:
  - a. Completed the 18 semester hours of course work required for the doctoral program as described above;
  - b. Passed both oral and written parts of the comprehensive examination; and
  - c. Acquired the MPH; or satisfied the School's MPH core course requirements which applied either at time of admission to the program or at the time of admission to candidacy. If students seek exemptions for any course requirements for the MPH on the grounds of equivalency of other courses taken, equivalency will be determined by the departments in the School which teach those particular courses.
6. **Research:** Each candidate is required to submit a dissertation reflecting research of such scope, originality, and skill in presentation as to indicate that the student has a command of the subject and has demonstrated an ability to contribute fresh knowledge or perspectives on the subject. In addition, the dissertation should demonstrate mastery of the research methodology of the discipline.
7. **Application for Degree:** When candidates approach completion of their research and can anticipate final approval of their dissertations they should apply for a degree on a particular graduation date. In the event that the degree is not received in that graduation, the student must file a new Application for Degree. Applications must be filed about three months before the time scheduled for the candidate's graduation in accordance with the deadline given in the calendar of events in this catalog.
8. **Final Oral Examination:** The final oral examination should be primarily a defense of the dissertation and be conducted by the appointed dissertation committee. The examination should be open to the public.

This examination shall be held only after all members of the dissertation committee have had adequate opportunity to review a draft of the dissertation which the candidate is prepared to submit for final typing. The dissertation adviser is responsible to the members of the committee for determining that the draft is an appropriate form for their evaluation. The committee may, at the time of the final oral, require alterations and corrections. The dissertation adviser is also responsible for verifying that the changes required by the committee have been made, but may delegate this responsibility to those committee members who imposed the requirements. When these requirements have been met, the Report of the Final Oral Examination is submitted to the Graduate School, and the dissertation in final typed form, designed to meet the standards as defined in *A Guide to the Preparation of Theses and Dissertations*, is registered with the Graduate School.

9. **Time Limitation:** All requirements for the degree must be completed within eight years of the time the student matriculated as a graduate student at this institution. If a student left the University at the completion of a master's program and returned later for the DrPH, he or she would be permitted eight

years after admission as a doctoral student for completion of requirements. If the program is interrupted, the student has the option of satisfying the requirements which were in effect either at the time of matriculation or during the final year of work.

10. **Leave of Absence:** A doctoral student may request and receive a leave of absence from graduate study for a definite stated time. Written requests are to be presented through the School's Associate Dean for Academic Programs to the Graduate School explaining the reasons for the leave. The request must be accompanied by a written approval from the department chair or director of the doctoral program and endorsed by the Associate Dean for Academic Programs. If the Graduate School approves the leave of absence, the time of that leave will not count against total time allowed for the degree.

### **Doctor of Philosophy**

The Doctor of Philosophy degree prepares persons for leadership in academic and related settings involving teaching and research with emphasis on basic or theoretical issues. Graduates are typically employed by universities or other organizations conducting research.

This degree is offered in the Departments of Biostatistics, Environmental Sciences and Engineering, Epidemiology, Health Behavior and Health Education, Health Policy and Administration, and Parasitology and Laboratory Practice. For details consult each departmental section in this catalog and *The Graduate School Catalog*.

The precursor to the PhD degree is typically the MSPH degree if the research is oriented to public health or the MS degree if the research is not so oriented.

### **Joint Degree Programs**

Joint degree programs are offered in certain departments of the School of Public Health in conjunction with the Schools of Medicine, Dentistry, Law, Social Work and Education (special education). Medical students can select the joint degree option through the Departments of Epidemiology, Health Policy and Administration, and Maternal and Child Health. Dental and law students enroll in the Department of Health Policy and Administration. The joint degrees with the Schools of Social Work and Education are through the Department of Maternal and Child Health.

Under the joint degree arrangement, a student may be able to earn two professional degrees in a period of time less than the total required by the two degrees separately. Information on joint degree programs is available from the department in which the student is interested in enrolling.

## **Grades**

Grades used in the evaluation of the performance of graduate students are as follows:

<b>H</b>	Clear Excellence
<b>P</b>	Entirely Satisfactory
<b>L</b>	Low Passing
<b>F</b>	Failed
<b>S</b>	Satisfactory

No work falling below the standard represented by the grade **L** is counted for graduate credit. If, in the judgment of the Administrative Board, the quality of

work of any student falls below the standard expected of graduate students, the registration of such student will be cancelled. A doctoral student becomes academically ineligible to continue in the Graduate School if he or she receives any grade of **F** or receives 9 or more hours of **L**.

A master's degree student is rendered ineligible to continue if he or she receives more than 0 hours of **F** or receives seven hours or more of **L** if **L** hours are greater than 25% of hours taken. The computation of hours taken will include only courses for which the student has received a grade of **H**, **P**, **L**, or **F**. Further, it may include 3 hours of **S** in course 393 (the first 3 hours taken) and courses taken through inter-institutional registration where other permanent letter grades may be assigned.

If a student either completes or withdraws from one graduate program and begins study in another graduate program, those courses to be credited toward the new program will form the basis for academic eligibility.

Additional information on academic regulations are published in *The Graduate School Catalog* which can be obtained from the Graduate School Office, Bynum Hall, CB#4010.

### **Delta Omega**

Election to the Theta Chapter of Delta Omega, public health's national honor society, occurs shortly before graduation and is based upon academic achievement and leadership potential.

### **Sigma Theta Tau**

Election to the Alpha Alpha Chapter of Sigma Theta Tau (national honor society of nursing) occurs shortly before graduation for nurse students in the School of Public Health.



## Financial Assistance

### Minority Presence Grant Program

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 up to \$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.

### Traineeships, Assistantships, & Loans

A limited number of federally sponsored "non-service" traineeships and fellowships are expected to be available to properly qualified candidates. Traineeships or fellowships will not be awarded until the student has been admitted to the School. Graduate assistantships are "service" appointments and some require a reduced load of academic work. Persons desiring consideration for service or non-service awards should so indicate by checking the appropriate box on the application for admission form.

Other work opportunities and some student loan funds are available from the University Student Aid Office. Application should be made to, Director, Office of Student Aid, CB# 2300, 300 Vance Building, Chapel Hill, N.C. 27599-2300.

### Scholarships and Fellowships

Two endowed awards are available to graduate students in the School of Public Health.

Professor Ruth Warwick Hay, the first Head of the Department of Public Health Nursing, left a part of her estate in trust for a scholarship which she wished to be known as the *Margaret Blee – Ruth Warwick Hay Scholarship*. The income from the fund is awarded annually as an honorary scholarship to a student enrolled in the Curriculum of Public Health Nursing. A Scholarship Committee of faculty and students oversees the selection of the candidate who is nominated and elected by the full-time faculty and students.

In 1987 an anonymous donor contributed \$50,000 to the School of Public Health in honor of two former faculty, Lucy S. Morgan and Eunice N. Tyler, who founded the Department of Health Education and are pioneers in the field of health education. The Lucy S. Morgan Fellowship is awarded annually to a master's degree student in the Department of Health Behavior and Health Education. Selection is based on scholastic achievement, integrity, and demonstrated leadership.

These awards are made and the recipients recognized at appropriate occasions each year.

## **Microcomputer Laboratory**

The microcomputer laboratory is an educational facility operated jointly by the School of Public Health's Division of Computing and Information Services and the University's Microcomputing Support Center. It is available for general student use.

The laboratory includes 40 IBM-PC compatible AT&T 6300 dual-floppy disk PCs networked to a file server. Each machine has 640k bytes of memory, about half have an attached IBM Proprinter printer, and several have 8087 coprocessors. In addition, ten machines have a connection to the campus broadband network and the School's VAX-based system for electronic mail. Three Macintosh SE computers networked to an Applewriter printer are also available.

The facility is housed in two rooms. One room is equipped with a Sony projection system for display of a computer screen. This room may be reserved by faculty for class demonstrations. When not reserved, the room is available for general student use. The second room is always available for student use. A student laboratory attendant is present during all operating hours and can provide assistance and minor problem solving.

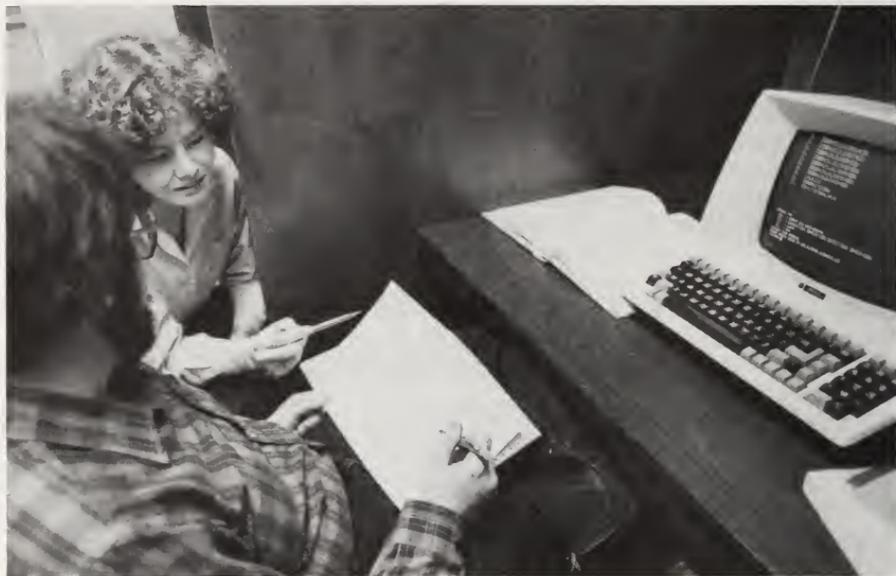
A variety of software is maintained for the IBM-type machines including Microsoft Word, Wordperfect, Procomm, dBASE IV, VP-Planner, Systat and PC-SAS. Software for the Macintoshes includes MacPaint, MacDraw, MacWrite, Microsoft Word and Excel. Training in use of microcomputers is available from the Microcomputing Support Center in the form of frequently scheduled short courses.

## **Student Union**

All members of the School of Public Health student body are members of the Student Union. Its offices are made up of departmental representatives and a central Union Board which represents the entire student body. The Assistant Dean for Students serves as a liaison representative. The purposes of the Student Union are: (1) to enhance and ensure the opportunity of the student to receive an education of the highest attainable quality; (2) to represent and advocate causes and interests of the student body; (3) to stimulate interest in and encourage activities which relate to health in its broadest sense; and (4) to function as a channel of communication between the student body and the faculty.



# Departments and Curricula



## Biostatistics

### Chair

Barry H. Margolin  
*Professor*

### Registrar

Betty H. Pounders  
Telephone No. (919) 966-2485

### FACULTY

James R. Abernathy,  
*Professor*

Arjun L. Adlakha,  
*Adjunct Associate Professor*

Ingrid A. Amara  
*Adjunct Assistant Professor*

Shrikant I. Bangdiwala  
*Research Assistant Professor*

Helen Bhattacharyya  
*Adjunct Assistant Professor*

Carol Bigelow  
*Adjunct Assistant Professor*

Richard E. Bilsborrow  
*Research Associate Professor*

Lloyd E. Chambless  
*Research Associate Professor*

David H. Christiansen  
*Research Assistant Professor*

Elizabeth J. Coulter  
*Professor*

John P. Creason  
*Adjunct Associate Professor*

Lester R. Curtin  
*Adjunct Associate Professor*

Nguyen V. Dat  
*Adjunct Assistant Professor*

Clarence E. Davis  
*Professor*

Deborah V. Dawson  
*Adjunct Assistant Professor*

David M. DeLong  
*Adjunct Associate Professor*

Elizabeth R. DeLong  
*Adjunct Assistant Professor*

Regina C. Elandt-Johnson  
*Professor Emerita*

Robert C. Elston  
*Adjunct Professor*

Edward L. Frome  
*Adjunct Associate Professor*

John G. Fryer  
*Research Professor*

Philip N. Gallagher  
*Lecturer*

<sup>1</sup>Dennis B. Gillings  
*Professor*

Sandra B. Greene  
*Adjunct Associate Professor*

<sup>2</sup>James E. Grizzle  
*Professor Emeritus*

Harry A. Guess  
*Adjunct Associate Professor*

Priscilla A. Guild  
*Adjunct Instructor*

Frank E. Harrell, Jr.  
*Adjunct Associate Professor*

Ronald W. Helms  
*Associate Professor*

David G. Hoel  
*Adjunct Professor*

Daniel G. Horvitz  
*Adjunct Professor*

James D. Hosking  
*Research Associate Professor*

Ronaldo Iachan  
*Adjunct Assistant Professor*

Joseph M. Janis  
*Adjunct Assistant Professor*

Joseph M. Janis  
*Adjunct Professor*

William D. Kalsbeek  
*Associate Professor*

David G. Kleinbaum  
*Professor*

Gary G. Koch  
*Professor*

Roy R. Kuebler, Jr.  
*Professor Emeritus*

Lawrence L. Kupper  
*Professor*

Kerry L. Lee  
*Adjunct Associate Professor*

Judith T. Lessler  
*Adjunct Associate Professor*

<sup>3</sup>Forrest E. Linder  
*Professor Emeritus*

Anders S. Lunde  
*Adjunct Professor*

Imogene McCanless  
*Adjunct Assistant Professor*

Timothy M. Morgan  
*Adjunct Associate Professor*

Lawrence H. Muhlbaier  
*Adjunct Assistant Professor*

Keith E. Muller  
*Associate Professor*

William C. Nelson  
*Adjunct Associate Professor*

Christopher J. Portier  
*Adjunct Assistant Professor*

Dana Quade  
*Professor*

Donald W. Reinfurt  
*Adjunct Associate Professor*

Wilson B. Riggan  
*Adjunct Associate Professor*

Ibrahim A. Salama  
*Adjunct Professor*

Basil Samara  
*Adjunct Assistant Professor*

John R. Schoenfelder  
*Adjunct Assistant Professor*

Pranab K. Sen  
*Cary C. Boshamer Professor*

Richard H. Shachtman  
*Professor*

Babubhai V. Shah  
*Adjunct Professor*

Marjolein V. Smith  
*Assistant Professor*

William M. Stanish  
*Adjunct Assistant Professor*

Thomas B. Starr  
*Adjunct Assistant Professor*

Paul W. Stewart  
*Research Assistant Professor*

Chirayath M. Suchindran  
*Professor*

Jeremiah M. Sullivan  
*Adjunct Associate Professor*

Michael J. Symons  
*Professor*

<sup>1</sup>Resigned August 31, 1988.

<sup>2</sup>Retired January 1, 1989

<sup>3</sup>Deceased August 18, 1988

Kinh Nhue Truong  
*Assistant Professor*  
Craig D. Turnbull  
*Associate Professor*  
H. Bradley Wells  
*Professor Emeritus*

William E. Wilkinson  
*Adjunct Associate Professor*  
O. Dale Williams  
*Professor*  
David L. Zalkind  
*Adjunct Associate Professor*

The Department of Biostatistics offers programs of study leading to an undergraduate degree (Bachelor of Science in Public Health), two master's degrees (Master of Public Health and Master of Science), and two doctoral degrees (Doctor of Philosophy and Doctor of Public Health).

The Bachelor of Science in Public Health (BSPH) program seeks to train students for entry-level statistical positions in health and related organizations, as well as for a sequence of career development opportunities including subsequent experience and graduate training. Information about admission and course requirements for this degree is available on page 17 of this catalog and in *The Undergraduate Bulletin* of the University.

The Master of Public Health (MPH) degree program is designed to prepare individuals for positions that require knowledge of the broad field of public health as well as specialized knowledge of biostatistics. The Master of Science (MS) degree program is more theoretical than the MPH program, and is designed to provide advanced training in both the theory and methods of biostatistics as applied to public health problems.

The Doctor of Philosophy (PhD) degree program is designed to provide advanced, research-oriented training in theory and methodology to prepare individuals especially for academic careers and research positions in the government or elsewhere. The Doctor of Public Health (DrPH) degree program emphasizes professional training aimed at preparing students for leadership positions in the general areas of applied research related to health problems, and delivery of technical statistical services in the health field. To meet these objectives the program is designed to equip students with a thorough knowledge of the technical aspects of the application of statistical techniques to a range of health problems, and a basic knowledge of an applied area of public health.

Graduate admissions are usually made initially for study toward a master's degree. Time requirements to obtain the degrees are typically 12 to 18 months for the MPH, two academic years for the MS, and approximately four years for the doctoral degrees.

Biostatisticians apply their quantitative knowledge to a variety of special fields related to the health of the people—such as the physical environment, the size and characteristics of the population, patterns of disease and disability, and health service utilization and costs. In recognition of these different applications, the Department provides for specialty options within biostatistics such as: biometry, cardiovascular diseases, data management, demography and population studies, environmental biostatistics, health services, and mental health statistics.

Further information about the Biostatistics training programs and requirements for admission are available in brochures which can be obtained by writing to the Department of Biostatistics, CB# 7400, School of Public Health, The University of North Carolina at Chapel Hill, Chapel Hill, North Carolina 27599-7400.

# Environmental Sciences And Engineering

## Chair

Russell F. Christman  
*Professor*

## Registrar

C.L. Lassiter  
Telephone No. (919) 966-3844

The Department of Environmental Sciences and Engineering offers five academic programs: Air and Industrial Hygiene, Environmental Chemistry and Biology, Environmental Management and Protection, Radiological Hygiene, and Water Resources Engineering. The reader is directed to the differences in program area content, research interests, and career opportunities. Descriptions of each area follow this introduction.

The Master of Science, Master of Science in Public Health, and Master of Public Health degrees are offered in each area. The general University and School of Public Health requirements for these degrees are listed on pages 20–23. A bachelor's degree with a major in engineering or science, usually chemistry, biology, or physics, is a requirement for admission. Applicants should have successfully completed a minimum of 40 semester hours of science or engineering including courses in physics, chemistry, biology, and calculus. The Master of Science in Environmental Engineering degree is offered by the programs in Air and Industrial Hygiene and Water Resources Engineering. See page 24 for admission and degree requirements. Candidates for this degree must hold an engineering degree from an institution accredited by the Accreditation Board for Engineering and Technology or an equivalent foreign institution. Backgrounds in civil, environmental, sanitary, chemical, or mechanical engineering, where the curriculum has involved fundamental work in chemistry, physics, mathematics, and the engineering sciences, are preferred. One and two year programs are offered in each area.

The Doctor of Philosophy is offered in each of the programs. In general, applicants without master's degrees are required to pursue the PhD via a master's degree. Direct admission to the PhD program may be possible for the exceptional student. Students holding master's degrees from other institutions may be required to enroll for a second master's degree in this department prior to initiating doctoral work. This requirement is dependent upon a review of the individual student's background by the faculty. Four semesters of full-time graduate study, at least two of which must be earned in continuous registration on this campus, are necessary. Based upon past experience actual residence time may be considered a minimum of two years following a master's degree, with a median of three and one-half years.

Other requirements include a major in one of the program areas and a supporting program or minor of at least 15, but preferably 21, semester hours excluding seminar and research units selected to be of maximum benefit in the conduct of the research and preparation of the dissertation. The Department and the University require knowledge of a research skill or foreign language for the PhD degree. Doctoral written and oral examinations are customarily given upon completion of course work and prior to initiating research for the dissertation. The defense of the dissertation is the final oral examination for the doctorate. Programs leading to the PhD are too varied to permit illustration.

Interdisciplinary studies are encouraged and coordinated by organizations within the University, such as the Institute for Environmental Studies, the Water Resources Research Institute, and the Institute for Marine Sciences. Joint programs of study, such as the program in radiological hygiene offered with North Carolina State

University in Raleigh, draw on the specific resources of each area with students developing their major interest depending on their training in basic disciplines.

Courses offered by the Department of Environmental Sciences and Engineering are described on pages 104–14 of this catalog. Courses may be taken at Duke University and at North Carolina State University without payment of additional tuition.

The Department publishes a brochure, “Programs of Graduate Study and Research,” and a quarterly “ESE Notes,” which are available on request.

## Air and Industrial Hygiene

David Leith <i>Professor</i> <i>Program Area Director</i>	John C. Lumsden <i>Adjunct Professor</i>
Warren A. Cook <i>Adjunct Professor</i>	Ted Martonen <i>Adjunct Professor</i>
John M. Dement <i>Adjunct Associate Professor</i>	Madhav B. Ranade <i>Adjunct Associate Professor</i>
Michael R. Flynn <i>Assistant Professor</i>	Parker C. Reist <i>Professor</i>
Donald L. Fox <i>Professor</i>	Carl M. Shy <i>Professor</i>
David A. Fraser <i>Professor</i>	Arthur C. Stern <i>Professor Emeritus</i>
Robert L. Harris <i>Professor</i>	Woodhall Stopford <i>Adjunct Assistant Professor</i>
John L. S. Hickey <i>Adjunct Associate Professor</i> <i>Emeritus</i>	Jerry J. Tulis <i>Clinical Professor</i>
Harvey E. Jeffries <i>Professor</i>	Ted Williams, <i>Lecturer</i>
Richard M. Kamens <i>Research Associate Professor</i>	William E. Wilson <i>Adjunct Professor</i>

This program is designed to provide graduate instruction for students interested in pursuing careers in air pollution control or industrial hygiene.

The air pollution program and industrial hygiene program have slightly different emphases. Industrial hygiene is that discipline devoted to the recognition, evaluation, and control of environmental factors in the work-place that cause sickness, impaired health and well-being, or significant discomfort and inefficiency among workers or citizens of the community. Air pollution control is concerned with pollutants released into the atmosphere, air cleaning technology, pollutant effects, transformation, transport, sinks, and eventual effects on humans, plants, and animals. Both air pollution control and industrial hygiene represent areas of preventive public health where the professional recognizes and evaluates a problem, considers alternative control measures, and weighs the cost of control against the long-term public cost of inaction.

The following courses are generally required for all students in air and industrial hygiene: **Biostatistics** (BIOS 110 or 135), **Principles of Epidemiology** (EPID 160 and EPID 160L), **Applied Physiology and Toxicology** (ENVR 143), **Air and Industrial Hygiene** (ENVR 141), **Introduction to Aerosol Science** (ENVR 145), and **Master's Technical Report** (ENVR 392).

For students primarily interested in industrial hygiene, courses in **Industrial Ventilation Design, and Lab** (ENVR 241, 241L), **Industrial Hygiene Practice** (ENVR 242), and **Industrial Hygiene Laboratory** (ENVR 244) are required.

For persons interested in air pollution, **Air Pollution Measuring, Monitoring and Survey** (ENVR 148) would be required.

Students earning the MSEE degree must take both **Industrial Ventilation Design and Lab** (ENVR 241, ENVR 241L) and **Air Pollution Control** (ENVR 245).

Students select elective courses covering such diverse topics as **Health Hazards of Industrial Operations** (ENVR 149), **Industrial Toxicology** (ENVR 144), **Aerosol Science Laboratory** (ENVR 145L), **Radiation Protection** (ENVR 161, ENVR 163), **Environmental Management** (ENVR 211, ENVR 212, ENVR 276), **Natural Resource Law and Policy** (ENVR 248), **Occupational Safety** (ENVR 147), **Instrumentation and Data Acquisition** (ENVR 243) or **Chemistry of the Troposphere** (ENVR 247). Other more specialized programs of study are possible and can be arranged by the student and adviser.

## Environmental Chemistry and Biology

Mark D. Sobsey

*Professor*

*Program Area Director*

Phillip W. Albro

*Adjunct Associate Professor*

Louise M. Ball

*Assistant Professor*

M. Judith Charles

*Research Assistant Professor*

Russell F. Christman

*Professor*

Donald E. Francisco

*Lecturer*

Avram Gold

*Professor*

J. Ronald Hass

*Adjunct Associate Professor*

J. Donald Johnson

*Professor*

Edward J. Kuenzler

*Professor*

Linda W. Little

*Adjunct Associate Professor*

David S. Millington

*Adjunct Associate Professor*

Daniel L. Norwood

*Adjunct Assistant Professor*

Hans W. Paerl

*Research Associate Professor*

Frederic K. Pfaender

*Professor*

Mark S. Shuman

*Professor*

Charles M. Weiss

*Professor*

This program prepares students with backgrounds in chemistry and biology for careers in the sciences of water resources, ecology, health effects, and pollution control. Course work and research opportunities are offered in aquatic biology; microbial ecology; microbiology; virology; limnology; health effects agents; toxicology, mechanisms of carcinogenicity; analytical, organic and physical chemistry; and the chemistry and biology of water and wastewater treatment processes.

Master's degree graduates from this program area are employed with local, national and international agencies and governments, consulting engineering firms, and industry. They serve as environmental managers, directors of field and laboratory research projects and as members of teams in water resources management and process development. PhD graduates join the faculties of colleges and universities in public health and environmental programs, and are employed as environmental researchers, managers and directors of major environmental research programs in government and industry.



Two years are usually required for completion of a master's degree in this program depending upon the interests and ability of the student as well as the type of financial support available. The average master's student spends a third of his time in the completion of a research project and technical report or thesis. These projects are usually part of larger grant-funded projects of the faculty and may provide the student with financial support as a research assistant. Traineeships, fellowships, and teaching assistantships are available also.

Course work concentrates in either the major of environmental chemistry or biology. Courses are also selected from other program areas and departments in the School, from many departments of the University and from nearby universities. Among these electives are courses ranging from environmental law and planning to physical chemistry and physiology.

Students pursuing environmental chemistry must take two courses in biology and three courses in chemistry. Students electing environmental biology take one chemistry course as well as four biology courses. In addition, one course each in epidemiology, biostatistics, engineering unit processes, and an elective environmental science course are required for both specializations.

The toxicology research offers students a basic preparation in biochemistry, molecular biology, dose-response theory, epidemiological methods and the techniques for human exposure evaluation. Students with this interest are prepared to identify and evaluate the injurious effects of chemicals in the environment, to suggest management strategies for controlling toxic substances and hazardous waste, and to participate in toxicological research. The identification, distribution, and dispersion of hazardous agents in the environment, the metabolism of toxic compounds and quantitative aspects of risk assessment are emphasized.

Courses commonly selected to satisfy the above requirements are: **Chemistry** – ENVR 122, ENVR 123, ENVR 221, ENVR 222, ENVR 223, CHEM 160; **Biology** – ENVR 131, ENVR 132, ENVR 133, ENVR 134, ENVR 135, ENVR 137, ENVR 138, ENVR 143, BIOC 100, ENVR 231, ENVR 232, ENVR 233, ENVR 235, ENVR 236, ENVR 237; **Engineering Unit Processes** – ENVR 174, ENVR 274, ENVR 275; **Epidemiology** – EPID 160. **Biostatistics** – BIOS 110, BIOS 135, BIOS 145; **Other Environmental Science Electives** – ENVR 142, ENVR 143, ENVR 161, ENVR 171, ENVR 283; **Research** – ENVR 320, ENVR 330, ENVR 392.

## Environmental Management and Protection

Alvis G. Turner

*Professor*

*Program Area Director*

Deborah A. L. Amaral

*Assistant Professor*

Richard N. L. Andrews

*Professor and Director*

*Institute Environmental Sciences*

Michael T. Berry

*Adjunct Associate Professor*

Linda S. Birnbaum

*Adjunct Professor*

Emil T. Chanlett

*Professor Emeritus*

Russell F. Christman

*Professor*

Larry D. Claxton

*Adjunct Associate Professor*

Frances Lynn

*Research Associate Professor*

Warren T. Piver

*Adjunct Associate Professor*

Morris A. Shiffman

*Professor*

<sup>1</sup>Stanley J. Weidenkopf

*Professor Emeritus*

Graduate studies in this program area offer a multi-disciplinary approach to understanding and developing strategies for protecting human health and environmental quality. Course work and research opportunities are offered in Environmental Management.

The management curriculum prepares graduates with a basic understanding of and the ability to use scientific and technical data, decision-making theory, management methods, environmental law, economic analysis and risk assessment in the development and implementation of public policy decisions, and environmental risk management. Students choosing this option are prepared to appreciate the relationship between environmental issues and the human behavior and institutional contexts in which they are managed. Technical and analytical skills in planning and evaluating environmental policy and program options are emphasized.

Students in the management option are expected to plan their courses and research to focus on environmental policy, management, law, economics, regulatory decision-making, and human behavior with sufficient technical preparation to appreciate the biologic and chemical processes which occur in the environment. All students are required to take BIOS 110, **Principles of Statistical Inference**; EPID 160, **Epidemiology**; ENVR 350, **Research**; and ENVR 392, **Master's Technical Report**.

Eighteen to twenty-four months are usually required for completion of a master's degree. At least one-third of this time is spent on the research and preparation of a technical report or thesis. Study and research for the PhD degree usually takes three years beyond the master's degree.

Graduates of this program are often employed by regulatory agencies, consulting firms, public interest groups, industry, and research organization.

<sup>1</sup>Deceased January 16, 1988

## Radiological Hygiene

James E. Watson, Jr.

*Professor*

*Program Area Director*

Edward L. Chaney

*Adjunct Professor*

Douglas J. Crawford-Brown

*Assistant Professor*

Merril Eisenbud

*Adjunct Professor*

Philip E. Hamrick

*Adjunct Associate Professor*

R. Eugene Johnston

*Professor*

Steven L. Simon

*Assistant Professor*

<sup>1</sup>Arthur W. Waltner

*Professor*

David B. Washburn

*Adjunct Assistant Professor*

Donald G. Willhoit

*Associate Professor*

The objective of the program in radiological hygiene is to provide competent, professional personnel to meet the increasing demand for health physicists and to provide scientific training for research in radiation biophysics.

Health physics is a scientific discipline and profession devoted to the study of the interaction of radiation with physical and biological systems and to the application of these principles in protecting humans and their environment from unwarranted radiation exposures. A health physicist is a person engaged in the study and application of scientific knowledge necessary in radiation protection. Based on the study of the mechanisms of radiation damage and of radiation standards, the health physicist develops and/or implements methods and procedures necessary to evaluate radiation hazards and ensure sufficient protection of humans and their environment.

The radiological hygiene program has been conducted since 1961 and offers graduate training leading to master's and doctoral degrees. Course work and research opportunities include traditional health physics topics, environmental radioactivity, radioactive waste management, radiation biophysics, microdosimetry, and medical health physics. Individual study of projects in medical health physics may be pursued in a joint effort with the Department of Radiology, School of Medicine. Three medical physicists in the Department of Radiology hold joint appointments in this Department.

Although health physics is not a widely known profession, career opportunities are very good. The current attention to matters such as radioactive waste disposal, indoor radon, and nuclear energy facilities will further increase the demand for professionals with the training to deal with these matters. Employment opportunities exist in industries, hospitals, universities, national research laboratories, state and federal agencies such as the Center for Devices and Radiological Health, Department of Energy, Environmental Protection Agency, and the Nuclear Regulatory Commission.

Students with degrees in physics, nuclear engineering, biology, chemistry, other sciences or engineering are admissible to graduate programs in radiological hygiene. The course ENVR 162, **Modern Physics for Environmental Science**, provides training in atomic and nuclear physics applicable to radiological hygiene for students without prior training in this area. Basic college physics is required.

The following courses or their equivalents are required of all master's students. A student is not required to take a core course if s/he has had equivalent instruction in prior work, but any substitutions or exemptions must be approved by the program

<sup>1</sup>Resigned January 14, 1988

area faculty. The core courses are: **Principles of Statistical Inference** (BIOS 110) or **Probability and Statistics** (BIOS 135); **Principles of Epidemiology** (EPID 160); **Radiation Instrumentation** (ENVR 163); **Radiation Biophysics** (ENVR 261); **Radiation Hazards Evaluation** (ENVR 263); **Seminar in Environmental Health** (ENVR 311); and **Research in Radiological Hygiene** (ENVR 360). Students may elect additional courses from within the Department and from other departments at this University as well as from North Carolina State University.

If course work and research for the required technical paper are undertaken concurrently, a master's degree can be completed in one year. The normal time required to complete a master's degree is one and one-half years. A two year program allows the student to carry out a more intensive research project and to take additional elective courses.

### **Water Resources Engineering**

Philip C. Singer

*Professor*

*Program Area Director*

Michael D. Aitken

*Assistant Professor*

John Briscoe

*Adjunct Associate Professor*

Francis A. DiGiano

*Professor*

Milton S. Heath

*Professor*

David H. Howells

*Professor Emeritus*

Maynard M. Hufschmidt

*Professor Emeritus*

James C. Lamb III

*Professor Emeritus*

Donald T. Lauria

*Professor*

Cass T. Miller

*Assistant Professor*

Forest O. Mixon

*Adjunct Professor*

David H. Moreau

*Professor*

Daniel A. Okun

*Kenan Professor Emeritus*

Dale Whittington

*Adjunct Associate Professor*

The Water Resources Engineering program is designed to prepare graduates to enter positions in several different areas of water resources and water quality engineering. Its overall goal is the development of technical skills, social awareness, and professional attitudes necessary for efficient entry and growth in water resources engineering careers. Upon completion of the program the graduate should be qualified to participate in investigating, planning, designing, constructing, operating, and regulating water resources systems and programs in service of man. Past Water Resources Engineering graduates have joined many types of agencies and organizations, including the federal government, state regulatory agencies, public and private utilities, consulting firms, many types of industries, the military services, and research organizations.

The environmental engineering program, which includes water resources engineering, is accredited by the Accreditation Board for Engineering and Technology. The Master of Science in Environmental Engineering degree is offered to students with bachelors' degrees in engineering from accredited undergraduate programs.

The curriculum is developed to meet specific needs and interests of each candidate within the framework of flexible overall requirements for exposure to content areas judged by the faculty to be basic necessities for the degree. This is accomplished by taking a minimum of two courses in environmental sciences, two in planning-design, and one course in each of the other groups indicated:

**Environmental Sciences**—ENVR 122, 123, 124, 131, 133, 134, ORSA 180, 181, ECON 272; **Biostatistics**—BIOS 135 or 145; **Planning-Design**—ENVR 117, 176, 255, 272, 273, 278, 282, 283, 284; **Water Quality Management**—ENVR 132, 171, 174, 271, 274, 275, 276, 277; **Master's Problem**—ENVR 370, ENVR 392.

The variety of course offerings provides latitude for the student and faculty adviser to plan a study program meeting needs of the individual candidate.

The master's program may be directed toward: (1) technical aspects of water supply and treatment, wastewater and hazardous waste treatment and disposal, and surface and ground water quality management, (2) planning, engineering, economic and administrative aspects of water resources development and management or (3) a combination of these approaches. The program requires a minimum of 12 months, although many students remain for an extra semester or two to complete extra courses or for independent study.

Other degrees available at the master's level in water resources engineering include the MS, MSPH, and MPH. These permit advanced training of interdisciplinary professionals for participation in water resources engineering activities and allow more flexibility for engineers wishing to prepare for practice across broad aspects of the field. Occasionally, engineers employed by health agencies are encouraged or required by them to obtain MPH or MSPH degrees, often in preparation for administrative posts. These candidates may require less emphasis on design or other technical aspects and more on administration of water resources or community health programs. Science or engineering students interested in the interdisciplinary aspects of water resources planning may prepare for careers based on operations research, systems analysis, resource economics, and other areas not directly related to the design, construction, or operation of water resources systems.

The PhD degree with a major in water resources engineering provides the student with more in-depth knowledge through further course work in water resources engineering, a minor or other program of study supporting the chosen area of research, and an intensive period of research. The goal is to develop understanding of current problems in the field beyond that acquired at the master's level. The PhD candidate must master methods for acquiring knowledge from various fields required to solve future problems, techniques for applying that knowledge to synthesize new solutions for water resources problems, and communication of investigational results to others through oral and written presentations.

Many of our PhD graduates have contributed greatly to the profession by becoming productive academicians and training future generations of water resources engineers. Others make major contributions through developing new knowledge as members of research organizations and academic institutions. Many engage in full or part-time consulting, using their advanced knowledge to assist in solving current problems and planning to meet future needs.

# Epidemiology

## Chair

Barbara S. Hulka  
*Kenan Professor*

## Registrar

Joyce Allen  
Telephone No. (919) 966-2119

## FACULTY

Timothy E. Aldrich  
*Adjunct Assistant Professor*

Naomar Almeida-Filho  
*Adjunct Associate Professor*

Dragana A. Andjelkovich  
*Adjunct Associate Professor*

Donna D. Baird  
*Adjunct Assistant Professor*

James Beck  
*Adjunct Professor*

Caroline Becker  
*Associate Professor*

Dan German Blazer  
*Adjunct Professor*

Brian A. Boehlecke  
*Clinical Associate Professor*

W. Eugene Broadhead  
*Adjunct Assistant Professor*

J. Trig Brown  
*Adjunct Assistant Professor*

Douglas S. Campbell  
*Adjunct Assistant Professor*

Thomas Cole  
*Visiting Instructor*

Gwen W. Collman  
*Adjunct Assistant Professor*

Joan Cornoni-Huntley  
*Adjunct Professor*

John R. Crouse  
*Adjunct Associate Professor*

Gordon H. DeFries  
*Clinical Professor*

Richard B. Everson  
*Adjunct Professor*

Robert H. Fletcher  
*Clinical Professor*

Suzanne W. Fletcher  
*Clinical Professor*

Judith A. Fortney  
*Adjunct Associate Professor*

<sup>1</sup>John T. Fulton  
*Professor Emeritus*

Richard C. Graves  
*Research Associate Professor*

Raymond S. Greenberg  
*Adjunct Associate Professor*

Jack Griffith  
*Adjunct Professor*

Harry A. Guess  
*Adjunct Associate Professor*

Curtis G. Hames  
*Clinical Professor*

Sioban D. Harlow  
*Research Assistant Professor*

Russell P. Harris  
*Adjunct Assistant Professor*

Carl G. Hayes  
*Adjunct Professor*

Donald M. Hayes  
*Adjunct Professor*

Suzanne G. Haynes  
*Adjunct Associate Professor*

Gerardo Heiss  
*Professor*

Siegfried H. Heyden  
*Adjunct Professor*

James E. Higgins  
*Adjunct Assistant Professor*

Michael Hogan  
*Adjunct Associate Professor*

Michel A. Ibrahim  
*Professor and Dean*

Sherman A. James  
*Professor*

Eric S. Johnson  
*Adjunct Assistant Professor*

Berton H. Kaplan  
*Professor*

David G. Kleinbaum  
*Professor (Biostatistics)*

<sup>1</sup>Deceased December 1988

Suzanne Landis  
*Research Assistant Professor*

Richard J. Levine  
*Adjunct Associate Professor*

Gory J. Love  
*Research Associate Professor*

J. Newton MacCormack  
*Adjunct Professor*

Katherine Magruder-Habib  
*Adjunct Assistant Professor*

Margaret F. McCann  
*Research Assistant Professor*

Melinda S. Meade  
*Adjunct Associate Professor*

Dexter L. Morris  
*Assistant Professor*

George R. Parkerson, Jr.  
*Adjunct Associate Professor*

Miquel S. Porta  
*Adjunct Assistant Professor*

Walter J. Rogan  
*Adjunct Associate Professor*

Michael Rosenberg  
*Adjunct Associate Professor*

Desmond K. Runyan  
*Clinical Assistant Professor*

Dale Sandler  
*Adjunct Assistant Professor*

Robert S. Sandler  
*Clinical Associate Professor*

David A. Savitz  
*Associate Professor*

Victor J. Schoenbach  
*Associate Professor*

Cecil G. Sheps  
*Professor Emeritus*

Carl M. Shy  
*Professor and Director OHSU*

C. Gregory Smith  
*Adjunct Assistant Professor*

John W. Stamm  
*Adjunct Professor*

David S. Strogatz  
*Research Assistant Professor*

Michael R. Swift  
*Clinical Professor*

Hugh H. Tilson  
*Adjunct Professor*

James Toole  
*Adjunct Professor*

Herman A. Tyroler  
*Alumni Distinguished Professor*

Marilyn F. Vine  
*Research Assistant Professor*

Edward H. Wagner  
*Clinical Professor*

David Weber  
*Assistant Professor*

Kristen A. Weigle  
*Assistant Professor*

Alice D. White  
*Research Assistant Professor*

Timothy Wilcosky  
*Research Assistant Professor*

Allen J. Wilcox  
*Adjunct Professor*

Mark E. Williams  
*Clinical Associate Professor*

Steven B. Wing  
*Research Assistant Professor*

Bonnie C. Yankaskas  
*Adjunct Assistant Professor*

The Department of Epidemiology offers research training in a number of specialized areas including cancer, cardiovascular diseases, environmental and occupational problems, health services/clinical, reproductive health, infectious disease, aging, health promotion/disease prevention, pharmacoepidemiology, biochemical factors, and psychosocial factors affecting health and disease. The study program includes courses, seminars and tutorials designed to help the student develop research and teaching skills in epidemiology. Degrees offered by the Department include the Master of Public Health, Master of Science in Public Health, Doctor of Philosophy, and Doctor of Public Health.

Students wishing to enroll in the program should have a background in the biological sciences, or in the behavioral sciences with some supporting courses in the biological sciences. They should have strong mathematical preparation, and should demonstrate a clear research commitment.

The MPH degree program is a course of study designed for persons with terminal professional degrees in the biomedical or behavioral sciences. Students are trained

for professional public health practice or for teaching positions, usually in schools of medicine. The MSPH is designed for students who do not have a relevant advanced degree and who plan to proceed for the PhD program.

Both master's programs require a minimum of thirty semester hours of credit, although most students complete additional credit hours. Requirements include the School core courses described on page 20 (for the MPH) and page 22 (for the MSPH). For both master's programs, the Department requires in addition a sequence of methods courses, as well as one or more substantive courses in Epidemiology. Other coursework may be determined with the adviser to meet the needs of the individual student.

All master's candidates must complete a comprehensive written examination and a master's paper, and present their research on a scheduled presentation day.

Master's programs average two years, although in some cases MPH students may complete the coursework portion in twelve to eighteen months.

The PhD is the most common doctoral program in epidemiology. The Graduate School residency requirements must be completed, with at least three semester hours of credit for dissertation (EPID 394). In addition a required sequence of methods courses and one or more substantive courses in Epidemiology are required. Other coursework is planned to meet the needs of the individual student. Doctoral students must perform a one-semester teaching internship in an introductory-level Epidemiology course. A qualifying examination is given at a suitable time during the student's residency, as well as a comprehensive oral and written examination. A dissertation of high quality, involving an original research problem and demonstrating a highly sophisticated level of skill, must be submitted and defended.

Students in the DrPH program must fulfill the School of Public Health requirements given on page 25 in addition to the requirements described above.

Doctoral programs average three years following the master's or terminal professional degree. A doctoral program prepares the student for a research or research and teaching career, most often in a university, federal or state agency or private research institution.

The Department of Epidemiology maintains strong relationships with other departments and schools of the University. Since the program of study is designed around the unique interests of the individual student and the requirements of the research proposal, students are encouraged to make use of the resources of the University. Students take courses in other departments and curricula within the School of Public Health as well as relevant work in the Schools of Medicine, Dentistry, Nursing, Pharmacy, and the Departments of Sociology, Psychology, Geography and Anthropology, and sometimes other areas.

The faculty of the Department of Epidemiology believe strongly in an apprenticeship mode of learning. Much of the work is in the form of association with individual faculty members, leading to achievement of a set of skills and competencies enabling the student to function comfortably in the field.

## Health Behavior and Health Education

### Chair

James R. Sorenson  
*Professor*

### Registrar

Linda Cook  
Telephone No. (919) 966-5771

### FACULTY

John R. Allen  
*Adjunct Instructor*

Howard Barnhill  
*Clinical Professor Emeritus*

Harriet H. Barr  
*Clinical Associate Professor*

Karl Bauman  
*Professor*

Susan Blalock  
*Adjunct Assistant Professor*

Ralph H. Boatman, Jr.  
*Professor*

Mary Bobbit-Cooke  
*Adjunct Instructor*

Charles Cook  
*Adjunct Associate Professor*

Harold Cook  
*Clinical Assistant Professor*

Leonard H. Dawson III  
*Clinical Associate Professor*

Henry D. Debnam  
*Adjunct Assistant Professor*

Brenda DeVellis  
*Associate Professor*

Robert DeVellis  
*Research Assistant Professor*

William W. Dow  
*Adjunct Assistant Professor*

Jo Anne Earp  
*Associate Professor*

Eugenia Eng  
*Assistant Professor*

Tekola Fisseha  
*Adjunct Instructor*

Robert M. Goodman  
*Research Assistant Professor*

Sue M. Gray  
*Adjunct Instructor*

Charles Harper  
*Professor Emeritus*

William Harper  
*Adjunct Assistant Professor*

John W. Hatch  
*Professor*

Sandra Headen  
*Research Assistant Professor*

<sup>1</sup>Godfrey M. Hochbaum  
*Professor Emeritus*

Richard M. House  
*Clinical Associate Professor*

Ethel Jackson  
*Clinical Instructor*

John C. Key  
*Adjunct Assistant Professor*

Amin Khalil  
*Adjunct Assistant Professor*

David Klein  
*Adjunct Professor*

David McCoy  
*Clinical Assistant Professor*

Timothy McGloin  
*Visiting Instructor*

Kenneth R. McLeroy  
*Adjunct Assistant Professor*

Julie McQueen  
*Adjunct Instructor*

Jane Matthis  
*Adjunct Instructor*

Lucy S. Morgan  
*Professor Emerita*

Elizabeth Mutran  
*Associate Professor*

Rebecca S. Parkinson  
*Adjunct Assistant Professor*

Clarence E. Pearson  
*Adjunct Professor*

Margaret B. Pollard  
*Clinical Assistant Professor*

Barbara Renner  
*Adjunct Assistant Professor*

Christopher Ringwalt  
*Adjunct Assistant Professor*

Carol W. Runyan  
*Research Assistant Professor*

<sup>1</sup>Retired July 1, 1988

Miriam Bachar Settle  
*Adjunct Assistant Professor*  
Allan Steckler  
*Associate Professor*  
Guy W. Steuart  
*Professor*  
Victor J. Strecher  
*Assistant Professor*

Rosalind Thomas  
*Clinical Assistant Professor*  
Emily T. Tyler  
*Adjunct Instructor*  
Eunice N. Tyler  
*Professor Emerita*  
Jane Vella  
*Adjunct Assistant Professor*

The Department of Health Behavior and Health Education is concerned with the general field of health-related social and behavioral change ranging from the levels of social policy to those of community, family, and individual. It has particular research and practice interests in women's health, patient education, mental health, rural health, international health, adolescent health, ethnic minority health and the health of the elderly.

The Department offers four graduate degree programs and an undergraduate major in Health Behavior and Health Education in the BSPH degree program. General information and details about admission and the undergraduate curriculum are found on page 17 of this catalog and in *The Undergraduate Bulletin*. Students in the program are prepared for entry level positions in health behavior and health education in health and other community agencies and for graduate study in health behavior and health education.

The Master of Public Health degree is the basic qualification for the professional health education specialist. The program of study prepares candidates for professional roles in community development, social action, health promotion and disease prevention, and in domestic and international policy agencies. In general, students are prepared for leadership positions in health education planning, management and evaluation. The focus of the MPH program is on the practice of selecting, applying and monitoring appropriate behavioral, social and political change strategies to enhance people's health.

The general requirements for admission are set forth on pages 20–22. The previous bachelor's degree should include a minimum of four courses in psychology, sociology, anthropology, and/or political science, at least one of these to be an advanced course. The candidate should have a minimum GPA of 3.0 for the junior and senior years. All applicants must take the GRE. Foreign students must also take the TOEFL.

In admission policy, besides the level and relevance of previous academic achievement, special consideration is given to developing a balanced student body recognizing the obligation to state residents and including a mix of individuals with special life or work experience drawn from the United States and foreign countries.

The minimum period of study is four semesters and two summer sessions in continuous full-time residence, admission being only in the fall of each academic year. A minimum of 54 semester hours is required. This includes School of Public Health core courses (e.g., Biostatistics, Epidemiology, etc). Health Behavior and Health Education core and elective courses and field practice.

All students take a common core of departmental courses for the first 12 months. An integrated theory, practice and research methods sequence is organized into learning modules, each of which is planned and taught by a team of faculty. This sequence is complemented by required program planning and management courses. All students are also required to complete a 12 month field practicum which runs concurrently with the course sequence. The field work begins with a community

diagnosis conducted by student teams and guided by field preceptors, who are local health education professionals. Subsequently, students work individually with a faculty adviser to design, implement and evaluate an intervention project. The practicum and course modules are sequenced and paced so that students can learn concepts and methods in the classrooms that can be immediately applied in the field.

At the end of the first year, each student must pass a written comprehensive examination. This examination covers theory, practice and evaluation research in health behavior and health education. During the remaining two semesters, students focus on a specialty area. They take elective courses and concentrate on their masters paper. The topic must address a public health problem that has implications for health behavior and health education theory and practice.

The Master of Science in Public Health emphasizes evaluation and research. It may be a terminal degree, but commonly will be a prelude to a doctoral degree program. Applicants are not accepted into the MSPH program at the beginning of their graduate studies. The determination is made at the end of the first academic year based on the interest and aptitude of candidates desiring an MSPH. The MSPH is not equivalent to the MPH, rather the MSPH is a more specialized program of study.

The general requirements for admission are set forth on page 22. The usual requirement is a prior bachelor's degree in the social sciences, but certain exceptions are acceptable. The minimum period of study is four semesters and two summer sessions in full-time residence.

Two doctoral degrees are offered: The Doctor of Philosophy (PhD) and the Doctor of Public Health (DrPH). In the PhD program, emphasis is placed on the behavioral and social sciences, research and theory development, and advanced research methodology. The program is designed primarily for students who intend to do research and teach in academic settings. The DrPH program emphasizes the application



of research findings to the solutions of public health problems, policy development, program administration, and program evaluation. This program is most suitable for students who are interested in the administrative, consultative, and evaluative research roles in public health. Four consecutive semesters in full-time residence are required: degrees are generally completed in four years.

Applicants are required to have a master's degree in health behavior and/or health education, one of the social or behavioral sciences, or in any field encompassing comparable training, such as social work, public health administration, or epidemiology. They must provide evidence of competency in public health in general, at least one of the social or behavioral sciences, basic aspects of health behavior and health education, and in the conduct of research.

## Health Policy and Administration

### Chair

Kerry E. Kilpatrick  
*Professor*

### Registrar

Debralee M. Andrew  
Telephone No. (919) 966-4091

### Associate Chair

Laurel A. Files  
*Associate Professor*

## FACULTY

Francesca Allegri <i>Clinical Instructor</i>	Barbara O. Chavious <i>Clinical Instructor</i>
James Elmore Allen <i>Associate Professor</i>	Marie Clay <i>Adjunct Instructor</i>
Richard N. L. Andrews <i>Professor</i>	Gordon DeFries <i>Adjunct Professor</i>
Thomas J. Bacon <i>Adjunct Associate Professor</i>	Gaston DesHarnais <i>Lecturer</i>
James D. Bader <i>Clinical Associate Professor</i>	Susan I. DesHarnais <i>Visiting Associate Professor</i>
Patricia Z. Barry <i>Associate Professor</i>	James P. Dixon <i>Clinical Professor</i>
William F. Baxter <i>Lecturer</i>	Bryan E. Dowd <i>Visiting Associate Professor</i>
Dan Edward Beauchamp <i>Professor</i>	George G. Dudley <i>Adjunct Professor</i>
Marvin J. Block <i>Adjunct Associate Professor</i>	William Shoemaker Flash <i>Associate Professor Emeritus</i>
Lawrence Brenner <i>Clinical Associate Professor</i>	Deborah A. Freund <i>Adjunct Associate Professor</i>
Edward F. Brooks <i>Adjunct Assistant Professor</i>	Moye Wicks Freymann <i>Professor</i>
Moses Carey, Jr. <i>Adjunct Assistant Professor</i>	Benjamin Gilbert <i>Clinical Assistant Professor</i>

Marsha R. Gold  
*Adjunct Assistant Professor*

Richard C. Graves  
*Clinical Associate Professor*

Frances Osborne Gust  
*Assistant Professor Emerita*

Abraham G. Hartzema  
*Clinical Associate Professor*

Mary Hawes  
*Adjunct Assistant Professor*

William Theodore Herzog  
*Associate Professor*

John Thomas Hughes  
*Professor Emeritus*

Sagar C. Jain  
*Professor*

William F. Jessee  
*Adjunct Associate Professor*

Arnold Daniel Kaluzny  
*Professor*

Kandiah Kanagaratnam  
*Clinical Professor*

Thomas R. Konrad  
*Research Assistant Professor*

Jacob Koomen, Jr.  
*Professor Emeritus*

Mary G. Kovar  
*Adjunct Professor*

John J. Lee  
*Clinical Associate Professor*

Ronald H. Levine  
*Adjunct Professor*

<sup>1</sup>Robert A. Loddengaard  
*Clinical Professor Emeritus*

James W. Luckey  
*Clinical Associate Professor*

Neil J. McDonald  
*Clinical Associate Professor*

Curtis P. McLaughlin  
*Professor*  
*Professor of Business Administration*

Robert A. McLean  
*Associate Professor*

John Mackowiak  
*Adjunct Associate Professor*

Donald L. Madison  
*Professor*  
*Professor of Family Medicine*

Nancy Milio  
*Professor*  
*Professor of Nursing*

Robert Burns Moorhead  
*Lecturer and Associate Dean*

Joseph P. Morrissey  
*Adjunct Associate Professor*

Eric B. Munson  
*Adjunct Professor*

Barnett R. Parker  
*Associate Professor*

John E. Paul  
*Adjunct Assistant Professor*

Harry T. Phillips  
*Professor Emeritus*

James V. Porto  
*Clinical Assistant Professor*

Thomas H. Rice  
*Assistant Professor*

Thomas Ricketts  
*Clinical Assistant Professor*

Leonard S. Rosenfeld  
*Professor Emeritus*

Richard Gary Rozier  
*Associate Professor*

Morris Schaefer  
*Professor Emeritus*

Robert C. Schreiner  
*Clinical Instructor*

Kit Nordbo Simpson  
*Clinical Assistant Professor*

William A. Sollecito  
*Adjunct Assistant Professor*

Hugh H. Tilson  
*Adjunct Professor*

James E. Veney  
*Professor*

Patricia F. Waller  
*Research Professor*

Jane Weintraub  
*Assistant Professor*

William G. Weissert  
*Professor*

Kenneth R. Wing  
*Professor*  
*Professor School of Law*

John Joseph Wright  
*Professor Emeritus*

William N. Zelman  
*Associate Professor*

<sup>1</sup>Retired September 1, 1988

The Department of Health Policy and Administration offers educational programs at the undergraduate, master's, doctoral, and postdoctoral levels. Each of these programs has special characteristics.

**The Undergraduate Program.** The undergraduate program (BSPH degree) prepares students for entry-level positions as managers of small facilities, as administrators of units within larger facilities, and for a variety of staff positions in health and health-related organizations. In addition, the program prepares students for further graduate study in the health professions or related professional programs such as business, law, or medicine. For further information about this program contact Professor Patricia Z. Barry, Director, Undergraduate Program.

**Residential Master's Programs.** The Department offers two master's degree programs: the Master of Public Health (MPH) and Master of Science in Public Health (MSPH).

The **MPH** degree requires 12 months of full-time studies in residence in Chapel Hill. Only those who hold doctoral degrees (MD, DDS, JD, PhD., etc.) or are enrolled in such degree programs are accepted. The MPH degree is designed to provide health professionals and scholars with a comprehensive understanding of public health philosophy and values and to develop competence for managerial and policy roles in the field of public health and related areas. Those interested in board certification in preventive medicine and public health dentistry should pay special attention to this degree.

The **MSPH** degree program prepares skilled professionals for positions in health services administration and management and health care policy analysis and implementation. Although the minimum qualification for admission is a bachelor's degree from an accredited college or university, those with graduate and professional degrees (MD, DDS, JD, etc.) should also give serious consideration to this degree because of its high quality and rigor. All students admitted for this degree are expected to have proficiency in microeconomics, mathematics, and accounting. The program is 21 months in duration. The first year consists primarily of required courses; most of the second-year courses are elective to facilitate specialization. Two concentrations are offered: Health Administration and Health Policy Analysis. Through proper choice of electives and working with individual professors, students may develop further specialization in Hospital Administration and Finance, International Health, Aging, Health Economics and Policy, Long Term Care Administration, Public Health Administration, Dental Health Administration, Quality Assessment Assurance, Population and Family Planning, or Program Design and Evaluation. For further information on the residential master's degree programs, contact Professor William T. Herzog, Director, Master's Program.

**Conjoint Degree Programs.** By special arrangement, master's degree programs may also be pursued simultaneously with several other degrees. The following combined degree arrangements have been developed: MD/MPH, DDS/MPH, JD/MPH, and PhD/MPH. Interested students should contact the Department for further details.

**Nonresidential Master's Program.** The Department also offers two nonresidential MPH degree programs designed for full-time administrators in health and human service agencies. The minimum requirements for admission are a bachelor's degree from an accredited college or university and three years of clinical and/or administrative experience in a health care setting.

The *Off-Campus Program* provides instruction one day a week during the regular academic year at sites accessible to students in western and eastern North Carolina

areas. This program is offered on a three-year cycle. The *Regional Master's Degree Program* provides instruction through a combination of six-week summer school sessions, integrated residential and nonresidential courses, and course transfer options, to reach health administrators over a wider geographic area. A new class is accepted each year in this program. The curriculum, faculty, examinations, standards, and other expectations for both the Off-Campus Program and Regional Degree Program are the same as of students in the residential MPH program. For additional information write to Professor Kit N. Simpson, Director, Nonresidential Programs.

**Doctoral Programs.** Studies for the doctoral degree are organized in two tracks: PhD and DrPH. The PhD and DrPH programs are built on a series of core courses in the major field of health policy and administration.

The PhD degree requires (a) a disciplinary area in which a formal minor is designated, such as sociology, political science, finance, or economics; and (b) a dissertation in health policy and administration that is based on, proceeds from, and contributes to applicative knowledge in the disciplinary field.

The DrPH degree (a) provides for an eclectic but necessary series of collateral courses directly relevant to the identified area of dissertation research, and (b) requires a dissertation involving application of multidisciplinary approaches to the investigation of a problem in health policy and administration.

The Department has a special collaborative arrangement for doctoral studies with the School of Pharmacy for students with background in pharmacy administration.

In addition to the minimum admission requirements, a master's degree in public health with emphasis in health services and administration, or an equivalent degree from an accredited university is required. Students entering the program are also expected to have completed graduate-level courses as follows: one year of graduate statistics with emphasis on multivariate regression and analysis of variance techniques, and one semester of graduate-level research methodology. For further information contact Professor William G. Weissert, Director, Doctoral Program.

**Visiting Scholars Program.** The appointment as a Visiting Scholar is given for a minimum of one semester to a maximum of three years. Visiting Scholars need not have a doctoral degree for they are accepted primarily on the basis of their professional status rather than academic credentials. For further information contact Professor Kerry E. Kilpatrick, Chair, Department of Health Policy and Administration.

Detailed information on the various programs of study, curricula, faculty, admissions requirements, financial assistance, and other matters is published in the Department of Health Policy and Administration catalog. Copies are available on request.

# Maternal and Child Health

## Chair

Milton Kotelchuck  
*Associate Professor*

## Registrar

Sue Ellington  
Telephone No. (919) 966-2018

## Assistant to Chair

Anna Niemitz

## FACULTY

Deborah E. Bender

*Clinical Assistant Professor*

Pouru Bhiwandiwalla

*Adjunct Associate Professor*

Dorothy C. Browne

*Associate Professor*

Sidney Shaw Chipman

*Professor Emeritus*

Julia DeClerque

*Adjunct Assistant Professor*

Raphael J. DiNapoli, Jr.

*Lecturer*

Michael F. Durfee

*Lecturer*

*Associate Professor of Pediatrics*

Anita M. Farel

*Clinical Assistant Professor*

Geraldine Gourley

*Associate Professor Emerita*

Joseph L. Holliday

*Adjunct Associate Professor*

Jaroslav Fabian Hulka

*Professor*

*Professor of Obstetrics and Gynecology*

<sup>1</sup>Howard N. Jacobson

*Clinical Professor Emeritus*

Lynn K. Knauff

*Adjunct Assistant Professor*

Jonathan B. Kotch

*Associate Professor*

Peter Lamptey

*Adjunct Assistant Professor*

Frank Aloysius Loda

*Adjunct Professor*

*Professor of Pediatrics*

Patrick McKenry

*Visiting Professor*

Marie Meglen

*Adjunct Assistant Professor*

C. Arden Miller

*Professor*

Sarah Taylor Morrow

*Adjunct Professor*

Richard R. Nugent

*Adjunct Associate Professor*

Mary Peoples-Sheps

*Associate Professor*

Jimmie L. Rhyne

*Lecturer*

Marjorie Rose

*Adjunct Assistant Professor*

Earl S. Schaefer

*Professor*

Earl Siegel

*Professor*

E. Barbara Stocking

*Associate Professor Emerita*

Amy Tsui

*Research Associate Professor*

J. Richard Udry

*Professor*

*Director, Carolina Population Center*

Tom Vitaglione

*Adjunct Assistant Professor*

Elizabeth L. Watkins

*Professor*

Ann F. Wolfe

*Adjunct Associate Professor*

<sup>1</sup>Retired August 31, 1988

The Department of Maternal and Child Health is strongly committed to improving the health of women, children, and their families through programs of education, research, and community service.

The educational mission of the Department is to prepare physicians, nurses, social workers, and others for public health leadership positions that are related to such areas as maternity care and family planning; child care and development; comprehensive family-centered health care; aspects of consumer and community development; policy, financing and legislation; and international maternal and child health. A favorable faculty-student ratio is maintained, with learning experiences enhanced by the multidisciplinary composition of faculty and students.

A rich variety of interdisciplinary programs in the area provide opportunities for students to develop special interests. These include the Health Services Research Center, Carolina Population Center, Clinical Center for the Study of Development and Learning, Frank Porter Graham Child Development Center, Area Health Education Centers, North Carolina State Division of Health Services, Family Health International, a rural program of community development and comprehensive health services, and health programs for rural areas and immigrants.

Students with interest in the broad field of maternal and child health pursue a program leading to the Master of Public Health degree. Students having a special interest, such as family planning and population studies or child care and development, may follow a more specialized program which leads to the Master of Science in Public Health degree. Programs usually cover two sixteen-week semesters and a twelve-week summer period, although longer programs may be necessary.

A joint degree program with the Division of Special Education and the Department of Maternal and Child Health prepares professionals to work with handicapped newborn infants, young children and their families in the context of the total community health care system. Graduates of the two-year program receive the MA in Education and the MPH.

A cooperative, dual degree plan of study with the School of Social Work is available to those wishing to obtain concurrently their professional degree in social work and a masters degree in public health with specialization in maternal and child health. Graduates of the two full-year courses of study receive the MSW and MPH.

Course sequencing restrictions require students to enter the masters program in the fall semester.

Core and elective courses and field work are the major elements of each program. Knowledge of biostatistics, epidemiology, factors related to the delivery of health services, and an understanding of the ways that biologic, environmental, social and behavioral factors affect health are required of all students. Foundation courses in maternal and child health are also required of all students. Electives may be drawn from many departments of the University. Community-based learning experiences are an integral part of the educational program, with field work assignments individually tailored by the student and faculty adviser.

Departmental courses focus on service and financing programs for mothers, children, and families, and include the historical development, content, characteristics, and planning and evaluative processes. Biologic, sociocultural, and psychological factors are considered as they relate to health needs and problems of maternal-infant health and family planning. Child health problems are given high priority, with opportunity provided to integrate this knowledge with techniques of program planning, implementation, and evaluation. Skills in advocacy, interdisciplinary teamwork, consultation, and research utilization are also taught by the Department.



All students who enroll in the MPH or the MSPH degree programs must meet University requirements for admission to the Graduate School. In addition, the Department admits students who hold prior degrees in the health professions listed below, whose career goals are firmly based in fields related to maternal and child health.

- (1) Medicine—MD or equivalent; consideration is also given to medical students who may exercise an option to complete medical and public health study concurrently, and to physicians who are engaged in residency training or other post-doctoral study who wish to complete public health study simultaneously;
- (2) Nursing—Clinical master's degree in maternity or pediatric nursing, preparation in an approved program of nurse-midwifery or preparation as a nurse practitioner in a relevant practice area, or a bachelor of science in nursing with at least two years of community health experience;
- (3) Social Work—Master of Social Work;
- (4) Other—Professional degrees in dentistry, physical or occupational therapy, education, and other related fields.

Preference is given to health professionals with at least two years of community health experience.

Applicants who hold baccalaureate degrees in a broad range of other related academic fields are considered for admission provided they have been employed for at least two years in a community health-related position and have firm educational and career goals.

Tradeships are available covering tuition, fees, and reasonable living expenses for some students, particularly those with an advanced degree in one of the health professions.

The DrPH in maternal and child health is offered for selected individuals who have previously earned a master's or equivalent degree in a related field. The DrPH program provides an opportunity for intensive study of the biologic, cultural and environmental factors influencing the health of mothers, children and their families; the development of investigative skills; and the application of knowledge, skills and techniques to the improvement of the health of mothers and children. Students indicate upon application which substantive area they wish to pursue in doctoral study. A minimum of two academic years of course work and directed research is required. Required courses include biostatistics and epidemiology, and an additional minimum of 18 semester hours as determined by the student's doctoral committee. A Departmental seminar is required each semester in residence.

## Nutrition

### Chair

Mildred Kaufman  
*Professor*

### Registrar

Jo Ann Roth  
Telephone No. (919) 966-3434

## FACULTY

Linda S. Adair  
*Associate Professor*

John J. B. Anderson  
*Professor*

Carolyn J. Barrett  
*Clinical Assistant Professor*

Christine Bazzarre  
*Adjunct Assistant Professor*

Rebecca B. Bryan  
*Associate Professor Emerita*

Thomas J. Chegash  
*Adjunct Assistant Professor*

Joseph C. Edozien  
*Professor*

MaryAnn C. Farthing  
*Clinical Associate Professor*

Pamela Haines  
*Assistant Professor*

Barbara A. Hughes  
*Adjunct Associate Professor*

Betty G. Kirkley  
*Assistant Professor*

Laureen Lopez  
*Assistant Professor*

Ali Paydarfar  
*Adjunct Professor*

Miriam Peterson  
*Adjunct Assistant Professor*

Barry M. Popkin  
*Professor*

Cordella Rumpf  
*Adjunct Assistant Professor*

Boyd R. Switzer  
*Associate Professor*

The programs of study in Nutrition are designed to prepare qualified individuals for careers in public health nutrition. Through these programs a broad curriculum in public health sciences is provided as well as courses in the physiological, biochemical, and behavioral aspects of nutrition and their application to the health of human populations. The programs currently offered lead to BSPH, MPH, and DrPH degrees.

The objective of the BSPH program in nutrition is to provide undergraduate training for students wishing to enter beginning level positions in community and public health nutrition or to pursue graduate training in nutrition, medicine, or dentistry. Application procedures and program descriptions may be found on pages 17-19 of this catalog and in *The Undergraduate Bulletin*.

Applicants for all graduate programs should have a "B" average or better and are required to submit Graduate Record Examination (GRE) scores. Applicants whose native language is not English are required to take the Test of English as a Foreign Language (TOEFL) in addition to the usual requirements. A brief autobiographical letter, not to exceed one typewritten page, is required which states the person's reason for applying to this degree program and his/her future career goals. Graduates in medicine and dentistry are encouraged to apply for admission to the programs and may submit Medical or Dental Aptitude Tests scores in lieu of GRE scores.

Prerequisites for the MPH program include the equivalent of four semesters (two academic years) of the biological sciences (a course in anatomy and physiology and microbiology required), two semesters (one academic year) of chemistry (organic chemistry required), one biochemistry course, two courses in social sciences (such as anthropology, psychology, or sociology), and one introductory course in human nutrition. An introductory course in economics is also recommended. Deficiencies in course prerequisites must be rectified prior to admission.

The MPH program in nutrition provides training in the broad field of public health including the biological and behavioral bases of foods, nutrients and eating practices in human nutrition, an understanding of nutrition-related problems in the community and the application of public health methods to their solution, and clinical and field experiences in the delivery of nutrition services under faculty supervision. Two MPH tracks are offered, one leading to eligibility of becoming a Registered Dietitian and the other to the pursuit of a research project as prerequisite to further graduate training.

To achieve these goals the MPH program is designed to permit each student to gain a strong background in the science and practice of public health. Students take the core courses required by the School as stated on page 21 of this catalog. They are also expected to acquire a sound knowledge of the science of human nutrition. This objective is achieved through elective courses and required ones, such as **Cell Biology (NUTR 150)**, **Meal Planning, Food Selection and Preparation (NUTRI 152)**, **Human Nutrition (NUTR 154)**, **Clinical Nutrition (NUTR 157)**, **Food Production, Processing and Packaging (NUTR 153)**, **Food Habits (NUTR 159)**, **Maternal, Infant and Child Nutrition (NUTR 200)**, and **Advanced Human Nutrition (NUTR 202)**. Lastly, a working knowledge of community nutrition programs and services coupled with adequate opportunities for concurrent block field experience is used to further strengthen classroom and laboratory experiences.

The MPH research track requires many of the same basic courses in Nutrition, but it also focuses on the development of a research proposal, conducting a faculty-approved investigation, and writing a master's thesis.

Students must pass a written comprehensive examination based on required and elective courses. This examination covers and integrates three general areas: biological and clinical aspects of nutrition, behavioral aspects of food and nutrition, and public health nutrition, including epidemiology, biostatistics and environmental issues. Students are advised to consider these examination requirements in their selection of elective courses in nutrition and other disciplines.

A master's degree in nutrition (or its equivalent) is required for admission to the DrPH program. Applicants that have not received the MPH degree must satisfactorily complete the requirements of the School of Public Health for the MPH degree before admission to candidacy. Applicants to the program are encouraged to arrange for a personal interview whenever possible.

A wide range of coursework is available. At the end of the first year of residence, doctoral students must take a written examination which tests competencies in the areas of basic and clinical nutrition, behavioral aspects of nutrition, and public health aspects of nutrition. Following satisfactory completion of the doctoral written and oral examinations, the student proceeds with a research project and dissertation under the guidance of an adviser and doctoral faculty committee. Research emphases are in the laboratory and community areas of nutrition.

## Parasitology and Laboratory Practice

### Chair

John R. Seed  
*Professor*

### Registrar

Anne V. Crumpler  
Telephone No. (919) 966-1656

### FACULTY

Libero Ajello  
*Adjunct Associate Professor*

Ralph S. Baric  
*Assistant Professor*

W. Emmett Barkley  
*Adjunct Professor*

Robert C. Barnes  
*Adjunct Associate Professor*

Carl H. Blank  
*Adjunct Associate Professor*

John B. Brooks  
*Adjunct Associate Professor*

Edward L. Cavanaugh  
*Adjunct Associate Professor*

Elmer F. Chaffee  
*Associate Professor Emeritus*

Sotiros D. Chaparas  
*Adjunct Associate Professor*

John F. Chapman  
*Associate Professor*

Robert C. Cooksey  
*Adjunct Associate Professor*

Herbert W. Cox  
*Adjunct Professor*

Frank V. Crout  
*Adjunct Assistant Professor*

Henry Daugharty  
*Adjunct Associate Professor*

Arthur F. DiSalvo  
*Adjunct Professor*

Walter R. Dowdle  
*Adjunct Associate Professor*

Vulus Raymond Dowell  
*Adjunct Professor*

Robert W. Edwards  
*Clinical Assistant Professor*

John J. Farmer III  
*Adjunct Associate Professor*

John C. Feeley  
*Adjunct Associate Professor*

George W. Gary  
*Adjunct Associate Professor*

Hilton T. Goulson  
*Professor*

James E. Hall  
*Associate Professor*

William H. Hannon  
*Adjunct Associate Professor*

Robert H. Harrison  
*Adjunct Associate Professor*

Charles L. Hatheway  
*Adjunct Associate Professor*

James R. Hendricks  
*Associate Professor Emeritus*

Gale B. Hill  
*Adjunct Associate Professor*

Nancy S. Hunter  
*Adjunct Assistant Professor*

Michael H. Ivey  
*Visiting Professor*

Leo Kaufman  
*Adjunct Professor*

Walter M. Kemp  
*Adjunct Professor*

Alan P. Kendal  
*Adjunct Associate Professor*

Michael P. Kiley  
*Adjunct Associate Professor*

James C. Lamb IV  
*Adjunct Associate Professor*

John E. Larsh, Jr.  
*Professor Emeritus*

Neil E. Mackenzie  
*Adjunct Associate Professor*

Malcolm A. Martin  
*Adjunct Associate Professor*

Joseph B. McCormick  
*Adjunct Associate Professor*

Robert W. McKinney  
*Adjunct Associate Professor*

Stephen C. Merritt  
*Assistant Professor*

Max D. Moody  
*Adjunct Associate Professor*

Claude W. Moss  
*Adjunct Associate Professor*

Charles H. Okey  
*Clinical Associate Professor Emeritus*

Athos Ottolenghi  
*Adjunct Professor*

Erskine L. Palmer  
*Adjunct Associate Professor*

Terry W. Pearson  
*Adjunct Associate Professor*

G. Briggs Phillips  
*Adjunct Professor*

Leo Pine  
*Adjunct Associate Professor*

John A. Reidy  
*Adjunct Associate Professor*

Charles B. Reimer  
*Adjunct Associate Professor*

Errol Reiss  
*Adjunct Associate Professor*

Michael A. Riggs  
*Adjunct Assistant Professor*

Eric B. Sansone  
*Adjunct Associate Professor*

Ernest Schoenfeld  
*Clinical Assistant Professor*

Peter B. Smith  
*Adjunct Associate Professor*

Francis W. Spierto  
*Adjunct Associate Professor*

Lola V. Stamm  
*Assistant Professor*

Alexander J. Sulzer  
*Adjunct Associate Professor*

David C. Swan  
*Adjunct Associate Professor*

Clyde Thornsberry  
*Adjunct Associate Professor*

I. Kaye Wachsmuth  
*Adjunct Associate Professor*

Norman F. Weatherly  
*Professor*

Hazel W. Wilkinson  
*Adjunct Assistant Professor*

The Department of Parasitology and Laboratory Practice offers four graduate degree programs.

The Master of Public Health program of study is intended primarily for those with experience in clinical or public health microbiology and requires a minimum of one academic year (nine months). The requirements for admission and for the degree are listed on pages 20–22 of this catalog.

Students are required to take the basic courses in biostatistics (BIOS 110), epidemiology (EPID 160), physical factors in health (a course in ENVR), and a course relevant to health services delivery systems. In addition they must also study **Medical Helminthology (PALP 134)**, **Medical Protozoology (PALP 135)**, **Problems in Public Health Laboratory Practice (PALP 142)**, **Public Health Bacteriology (PALP 150)**, **Public Health Virology (PALP 151)**, and **Seminar in Parasitology and Public Health Laboratory Practice (PALP 331)**.

Electives may be chosen from a variety of Department, School, and campus courses including Nature of Parasitism, Parasitological and Laboratory Methods, Epidemiology, and Biostatistics.

The program of study of the Master of Science in Public Health requires a minimum of one academic year (nine months) and is intended primarily for those

who either plan to pursue a career in some phase of medical parasitology or who plan to proceed in a Doctor of Philosophy degree program. The requirements for admission and for the degree are listed on pages 28 of this catalog.

Students in this degree program are also required to take basic courses in biostatistics, epidemiology, and environmental sciences. Major parasitology courses are **Medical Helminthology** (PALP 134), **Medical Protozoology** (PALP 135), **Problems in Parasitology** (PALP 140), **Seminar in Parasitology and Laboratory Practice** (PALP 331), **Nature of Parasitism** (PALP 230), and **Host-Parasite Metabolic Interactions** (PALP 138). **Biochemistry** (BIOC 100) and **Immunobiology** (MCRO 114) are possible electives.

The program of study in Public Health Laboratory Practice leading to the Doctor of Public Health degree is planned individually for each student based on previous academic preparation, laboratory experience, future plans, and personal interest. The requirements for admission and for the degree are listed on pages 25-28 of this catalog. All students are required to take **Biochemistry** (BIOC 100), **Survey of Health Laboratory Issues** (PALP 161), **Problems in Public Health Laboratory Methodology** (PALP 235), and **Advanced Seminar in Parasitology and Laboratory Practice** (PALP 333). Research competence is gained in PALP 336.

The course program leading to the Doctor of Philosophy degree may be taken on a major-minor basis between the Department of Parasitology and Laboratory Practice and one or more departments within the University. An applicant may elect to minor in zoology, botany, bacteriology, or any other areas approved by his study committee. Each student's program is planned individually in terms of previous preparation and experience, future plans, and interest.

Teaching experience is an essential part of professional training in this Department. Therefore, laboratory instruction equivalent to six contact hours a week for two semesters, or until teaching competence is acquired, is required for all PhD candidates.

## Public Health Nursing

### Chair

Marla E. Salmon

*Associate Professor*

### Registrar

Mattie Pierce

Telephone No. (919) 966-5265

### Deputy Chair for Student Affairs

Marion Elizabeth Highriter

*Associate Professor*

### Deputy Chair, Research Development

Maija L. Selby

*Associate Professor*

## FACULTY

Marilyn Hefte Asay

*Adjunct Assistant Professor*

Lou K. Brewer

*Lecturer*

Dolores S. Brookshire

*Adjunct Instructor*

Nora Frances Cline

*Associate Professor Emerita*

Elizabeth Merrill Edmands

*Associate Professor Emerita*

Estelle Marie Fulp

*Adjunct Associate Professor*

Rose Geraldine George

*Assistant Professor Emerita*

Betty B. Griffith

*Adjunct Assistant Professor*

Ann Caton Hansen  
*Associate Professor Emerita*

O. Marie Henry  
*Adjunct Associate Professor*

Lois Simmons Isler  
*Adjunct Assistant Professor*

Therese P. Lawler  
*Adjunct Assistant Professor*

Marie Justin McIntyre  
*Associate Professor Emerita*

Helen Jo McNeil  
*Adjunct Associate Professor*

Beatrice Bell Mongeau  
*Associate Professor Emerita*

Mary Peoples-Sheps  
*Associate Professor*

Sue Randolph  
*Adjunct Instructor*

Emily Gail James Rivenbark  
*Adjunct Instructor*

Doris Emma Roberts  
*Adjunct Professor*

Bonnie Rogers  
*Assistant Professor*

Catherine Staes  
*Adjunct Instructor*

Rachel Stevens  
*Clinical Assistant Professor*

E. Barbara Stocking  
*Associate Professor Emerita*

Dorothy McComb Talbot  
*Professor Emerita*

Nancy Lou Tigar  
*Lecturer*

Elizabeth M. Tornquist  
*Lecturer*

<sup>1</sup>Clara R. Walters  
*Clinical Assistant Professor Emerita*

Julia Day Watkins  
*Associate Professor Emerita*

The Curriculum in Public Health Nursing provides graduate study in generalized public health nursing with opportunities to specialize in the area of occupational health nursing. Opportunities are provided for students to participate in faculty members' research, continuing education and technical assistance activities which are conducted throughout North Carolina and the region.

Although full-time enrollment is encouraged, students may choose to enroll part-time. Students are normally admitted at the beginning of the fall semester and must meet the general University requirements for admission to graduate studies. In addition to the general requirements, the Curriculum in Public Health Nursing requires the following:

- A baccalaureate degree with a major in nursing from an NLN accredited program
- Evidence of Registered Nurse licensure and one year of work experience
- Coverage by professional liability insurance
- Attainment of satisfactory scores on the Graduate Record Examination

In exceptional cases, persons not meeting all requirements may be accepted for admission on a conditional basis. Ability to meet the conditions satisfactorily will allow continuation in the Curriculum after the first semester. Inability to do so will result in discontinuation of student status after the first semester.

The Curriculum offers the Master of Public Health (MPH) with subspecialty options in public health nursing administration, occupational health nursing, or an independent option that requires arrangement with a faculty adviser prior to admission. It also offers the Master of Science (MS) degree with emphasis on preparation for careers in research and teaching in the areas of subspecialty options mentioned for the MPH.

The MPH program requires a minimum of one calendar year of study in addition to the master's paper. The MS program requires two academic years and 45 semester credits.

<sup>1</sup>Retired August 31, 1988

Programs are planned with faculty advisers on the basis of individual experience, needs, and career goals. A minimum of fifteen credits of public health nursing courses is required.

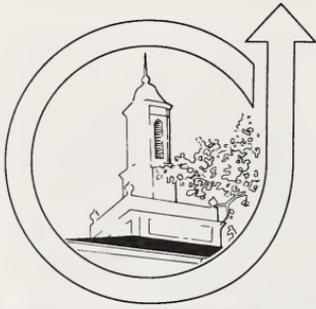
The program of study in the delivery of public health nursing administration is designed to prepare nurses for collaboration on multidisciplinary teams in planning, conducting and evaluating community health services and for the design and delivery of public health nursing services. Required public health nursing courses include **Public Health Nursing I and II** (PHNU 302-303), **Research Methods in Public Health Nursing** (PHNU 299) or its equivalent, **Advanced Studies in Administration of Community Nursing Services** (PHNU 360), and **Field Practice in Community Health Nursing** (PHNU 396). Public health courses required for the MPH degree are listed on page 21. Selected courses in health policy and administration are required. A master's paper on a subject pertinent to public health nursing is required in addition to satisfactory completion of a written comprehensive examination.

The program in occupational health nursing is designed to prepare nurses for positions in advanced practice, consultation, administration, or supervision. In addition to the School core requirements, students are required to take PHNU 281, 282, 299 or the equivalent, 302-303, 396, and selected courses in the environmental health sciences. Additional clinical practicums are encouraged. A master's paper on a subject pertinent to occupational health nursing is required in addition to satisfactory completion of a written comprehensive examination. As part of the UNC Occupational Safety and Health Educational Resource Center (OSHERC), the occupational health nursing program offers an interdisciplinary educational program.

The program leading to the MS degree is designed to prepare nurses for careers in research and teaching related to public health or occupational health nursing. The same subspecialty options available within the MPH program are available within the MS with the same nursing course requirements. A master's thesis is required in addition to satisfactory completion of a written comprehensive examination. Electives are selected to meet individual needs.

The Curriculum is currently offering part-time Off-Campus MPH degree programs in Hickory and Wilson, North Carolina. In this program the student meets the MPH degree requirement of one year's full-time study in three and one-half years on a part-time basis.





# 50 Years of Change and Challenge

UNC School of Public Health

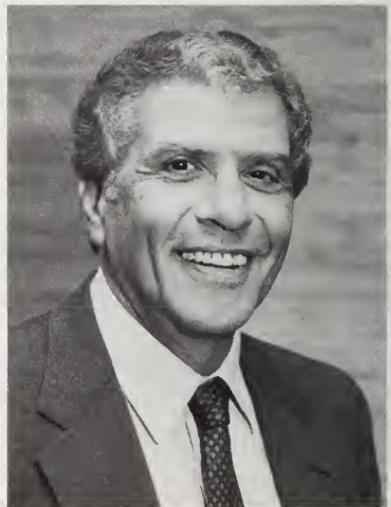
1939–1940 to 1989–1990



Portrait of Milton J. Rosenau, Director of the Division of Public Health and first Dean of the School. W. Fred Mayes, Dean 1963–1972, (left) and Edward G. McGavran, Dean 1947–1963 (right)



Bernard G. Greenberg  
Dean 1972–1982



Michel A. Ibrahim  
Dean 1982 to present



Temporary buildings used as classrooms in the 1940s and 1950s



Dr. Lucy Morgan (right), professor of public health education, confers with Dr. Howard M. Fitts (left) and Mr. B. T. McMillan about the preparation of public health educators in the graduate program at North Carolina College (now N.C. Central University). In the 1940s and 1950s faculty of the UNC School of Public Health offered a duplicate master's program in public health education at NCCU.



# Divisions and Special Programs

## Division of Community Health Service

Director — Richard M. House

In recognition of its public responsibility, the School is actively involved in community service throughout the state of North Carolina. Service projects, in addition to providing direct assistance to agencies and professionals in the field, allow the School to demonstrate the relevance of teaching and research efforts to current community problems. The Division functions as an interface between the School and the health-related organizations in the state which form a major part of its constituency. For students interested in community involvement, the Division can provide resources ranging from information to financial assistance.

The Division promotes faculty consultation to agencies involved in planning, organizing, and delivering health services by matching agency needs with faculty interests. Increasingly, students are being included in teams working on technical assistance projects. The Division also facilitates opportunities for various groups, community leaders, and organizations to interact with faculty and others in discussing health issues and policy, thereby contributing to public health policy at the local, state, and national levels.

The Office of Continuing Education coordinates the development of the School's programs for professionals in the field of public health. These programs have three primary objectives: (1) providing up-to-date information on scientific advances and innovations in the design and delivery of health and human services; (2) reducing the lag time between development of new knowledge and its application in practice; and (3) offering short term training in specialty areas not normally available in existing formal educational programs.

In addition, the Continuing Education Office assists official and voluntary health agencies, professional associations, and other higher educational institutions in developing continuing education programs. Services provided by the Continuing Education office include help in planning, developing, marketing, and conducting continuing education programs.

The Area Health Education Centers (AHEC) activities are designed to decentralize the education of health professionals and to strengthen regional resources for meeting health manpower training needs. Each of the five Health Science schools in the University is linked with the nine regional AHEC offices through a network of coordinators. The AHEC Program Unit for the School of Public Health is located within the Division. The AHEC network supports and provides coordination for technical assistance and continuing education services through the Division.

For students, AHEC provides advice and assistance in locating sites for concurrent and block field training. The Division receives local requests for student assistance via the AHEC regional offices located throughout the state. With knowledge of a student's interests and experience, the Division staff in the School can assist in negotiating a suitable field placement. In addition, the AHEC Program has funds available for student travel and housing during field training.

The Learning Resources Center supports the teaching, research and service activities of School of Public Health faculty. A wide range of educational media is available to faculty as they develop instructional materials for courses. Consultation on instructional design is also available. Periodically, workshops are held for students on such topics as organizing and making presentations, selecting and using media, and educational methodology.

The Director of the Division of Community Health Service is available to answer further questions about the Division and its services.

## Program on Aging

Director — William G. Weissert

The schoolwide Program on Aging promotes research, teaching and service activities related to the health care of the aged. Its strong emphasis on research reflects a conviction that the emergent field of aging still lacks a sufficient empirical basis for sound public policy development.

Involvement in research projects of the Program on Aging is strongly encouraged as students pursue a course of study in one of the traditional public health disciplines. Students may associate with the Program through: taking courses; working with a Program faculty associate in Health Policy and Administration, Biostatistics, Epidemiology, Public Health Nursing or Health Behavior and Health Education as a member of a research project team; or writing an aging policy-related undergraduate honors paper, master's paper or doctoral dissertation. A limited number of research assistantships are available each year.

Course offerings include: HPAA 250, **Health Policy and Aging**; HPAA 176-177, **Long Term Care Administration I and II**; PHNU 101, **Aging and Human Development**; a new course, **The Epidemiology of Aging**, is planned for 1989, and a variety of courses in disciplines which study demographic, economic, sociological and epidemiologic aspects of population subgroups and age change. Listings of the latter are available from the Program on Aging office.

A national survey of adult day care centers has yielded a new interactive software package which will be made available to adult day care centers, hospitals, nursing homes and other interested service agencies who want to explore offering cost-effective adult day care services.

Other current research projects include an examination of the use, cost, and out-of-pocket expense of nursing home care in the United States and how private long-term care insurance policies may impact on the economic well-being of the elderly. In addition, using national data sets, estimates of the costs of publicly-financed long term care insurance have been produced. Other studies include modelling the risk of nursing home institutionalization and the prevalence of functional dependency among the elderly population in states and counties. Using findings from these and other ongoing studies, researchers are exploring ways of improving efficiency of home care programs so that they operate closer to the breakeven point in net social costs. Research findings are disseminated widely in presentations and leading health services research journals.

## **Division of Computing and Information Services**

**Director — Robert C. Schreiner**

The Division of Computing and Information Services (CAIS) serves the unique computing and information management needs of the faculty, staff and students of the School of Public Health. Long a part of the Dean's Office as Central Computing and Data Processing, CAIS was organized as a separate Division in 1986.

The purpose of CAIS is to provide central operation of administrative, word processing, and office automation systems for staff and faculty use, a microcomputer laboratory for student educational use in cooperation with the University's Microcomputing Support Center, and access to University and regional mainframe computers for educational and research use. CAIS services complement those provided by campus-wide computing organizations such as Academic Computing Services and the Microcomputing Support Center.

Specific services available to faculty and staff users of the VAX/VMS system include: word processing and word processing user support; printing on a variety of draft and letter-quality printers; electronic communications including mail and file transfer; access to various information systems; communications by public dial-up telephone lines for users to access the VAX from remote sites; direct and dial-up connection to the campus broadband data communications system and from there to a variety of campus computer systems including the library's online card catalog.

VAX software includes MASS-11 word processing, Datatrive, a data entry, query and report generation system which may be combined with the Forms Management System to generate on-screen forms for ease in data entry; 20/20, a versatile spreadsheet program for preparing budgets and other spreadsheet applications; VAXmail for local electronic mail and access to the Bitnet and other mail networks; TeX (Tau Epsilon Chi), a technical typesetting and text formatting program; D-Pict graphics program to produce camera-ready quality graphs; applicant/student/alumni data base system; short course records management system; and personnel information management system.

## **Program for Health Promotion and Disease Prevention**

**Director — James R. Sorenson**

The Program for Health Promotion and Disease Prevention (HPDP) within the School of Public Health (SPH) promotes research, innovative demonstration programs, teaching, consultation and technical assistance on issues of human wellness. Established in 1985, the Program is located administratively in the Dean's Office and is closely linked to the UNC Center for Health Promotion and Disease Prevention. An interdisciplinary committee of SPH faculty and representatives from state health agencies serves as the Program's Steering Committee and assists the Program in the development of goals and objectives. Program activities correspond to the 1990 Objectives for the Nation and include the promotion of SPH interdepartmental HPDP initiatives in AIDS research, health program assessment, Type II Diabetes behavioral change interventions and evaluations, and infant and child health and survival, among others. These integrated activities offer opportunities for students to work in a multidisciplinary environment while focusing on critical health issues.

# Center for Health Promotion and Disease Prevention

**Director — O. Dale Williams**

The Center for Health Promotion and Disease Prevention is a collaborative activity of the Schools of Public Health, Dentistry, Medicine, Nursing, and Pharmacy and the office of the Vice Chancellor for Health Affairs.

The Center was developed to foster an interdisciplinary response to the ever growing need for health promotion and disease prevention activities in the state, region and nation. The Center focuses on such programs to try to stop unnecessary suffering and premature deaths caused by preventable health problems.

The Center governance includes a Policy Board, chaired alternately by the deans of the Schools of Public Health and Medicine, which sets the overall direction and an Operational Committee, including representatives from the five schools, North Carolina's State Health Director, the University's Health Services Research Center and the office of the Vice Chancellor for Health Affairs, and which develops programs and activities. Task Forces have been organized on cancer prevention, cardiovascular disease, continuing education, injury prevention and low birth weight. Also included are groups on aging and children and youth.

## Health Services Research Center

**Director — Gordon DeFriese**

Established in 1968, the Health Services Research Center has organized interdisciplinary research on the structure and impact of health care services delivery systems. A fundamental interest has been the interaction between the medical care system and vulnerable populations, such as the elderly, people in poverty, rural residents, minority groups, children, the chronically ill, and the mentally ill. Questions about access to care, quality of care, efficacy and effectiveness of care as they affect health-related quality of life are examined in a variety of studies. The Health Services Research Center continually reexamines its research agenda to ensure that resources are applied to questions of particular importance, with research and evaluation work divided into 10 program areas: The Health Professions; Health Care Organizations; Medical Practice; Health Promotion and Preventive Health Services; Mental Health Services; Aging, Disablement and Long-Term Care; Child Health Services; Health Care Economics and Finance; International Health Services; and Health Policy Analysis. Coordinated with its research and evaluation agenda are the Center's efforts in information dissemination, technical assistance and education. With over 20 years of health care research and policy analysis experience, there are many opportunities for those interested in using Center-sponsored research as the source of data for their own investigations, and the Center stands ready to be of assistance to students and faculty with interests in these issues.

## **Occupational Health Studies Program**

**Director — Carl M. Shy**

The Occupational Health Studies Program is an interdisciplinary research group involving the Departments of Biostatistics, Environmental Sciences and Engineering, and Epidemiology. It is administratively based in the Department of Epidemiology. The program conducts studies to identify work-related illness and causes of death, to identify environmental hazards, and to develop recommendations for surveillance to permit early detection of health problems and hazards.

In the 1970's the OHSP conducted a major occupational health research program in the tire and rubber industry with support by the United Rubber, Cork, Linoleum, and Plastic Workers of America International Union and the General, Goodyear, Firestone, and Uniroyal Companies. Subsequently, a major research project was completed in the phosphate fertilizer industry with support from the Florida Phosphate Council. More recently, the OHSP began a study of cancer risks in the North Carolina Dusty Trades Industry. This study is being conducted cooperatively with the National Institute of Occupational Safety and Health and the National Cancer Institute. The research of the OHSP provides excellent opportunities for specialized training programs for students with specific interest in occupational health.

## **Carolina Population Center**

**Director — J. Richard Udry**

The Carolina Population Center provides coordination for a University-wide interdisciplinary program in population research and research training. Its efforts span the social, behavioral, and health sciences. In addition to the School of Public Health Departments (Biostatistics, Epidemiology, Health Policy and Administration, and Maternal and Child Health), primary population courses are offered in anatomy, anthropology, city and regional planning, economics, geography, psychology, and sociology. These courses are selected by the Population Center training committee to represent appropriate opportunities for concentration of studies on population dynamics, policy, and research methodology as well as demography.

The Department of Biostatistics provides courses in methods of demographic measurement, analysis, and modeling. The Department of Epidemiology deals with population dynamics and family planning, as well as methodology. In the Department of Health Policy and Administration, concentration is in population policy and administration. The Department of Maternal and Child Health is concerned with family planning and human reproduction.

Additional information concerning opportunities for special study in this field may be obtained from the heads of the departments listed above, or from the training office of the Carolina Population Center.

## **Institute for Environmental Studies**

**Director — Richard N. L. Andrews**

The Institute for Environmental Studies is administratively located within the Department of Environmental Sciences and Engineering of the School of Public Health, but has a campus-wide mission as a focal point for interdisciplinary work in environmental studies. The general purposes of the Institute are to foster and coordinate interdisciplinary research, teaching, and service in environmental concerns among the various units of the University of North Carolina at Chapel Hill. In addition, the Institute assists in cooperative efforts on environmental matters between the Chapel Hill campus and other campuses of the University of North Carolina, with other colleges and universities, and with governmental and private organizations. Specific activities include sponsorship of the annual Environmental Studies Visiting Lecture Series, development of information for students concerning environmental courses and curricula, sponsorship of seminars and colloquia, development of interdisciplinary research proposals, technical assistance and educational programs for the public, and publication of the Carolina Environmental Essay Series.

## **Office of International Public Health Programs**

**Acting Director — Donald T. Lauria**

The Office of International Public Health Programs facilitates the development of the international and cross-cultural research, consultation and training activities of the School of Public Health. It also assists the School in adapting its programs to the needs of foreign students, visiting scholars and students who intend to pursue an international health career. The office maintains and develops relationships with other international program units on campus and with international assistance agencies and governments to promote the exchange of expertise and the establishment of collaborative research and demonstration projects, particularly with the less developed countries of the world.

Other activities of the Office include the sponsorship of the International Health Forum, a University organization of faculty and students with interests in international health, an International Health Careers Program and the School's Foreign Student Advisory Committee. The Office administers a grant from the United States Agency for International Development (USAID) which supports faculty and students in international research projects associated with USAID programs. The grant assists in strengthening the international capabilities of the School and other health-related units on campus.



# Faculty



- James Ralph Abernathy** (1965), *Professor of Biostatistics* – B.S., 1951 (Samford); M.S.P.H. 1953 (The University of North Carolina); Ph.D., 1965 (The University of North Carolina at Chapel Hill)
- Linda S. Adair** (1988), *Associate Professor of Nutrition* – B.S., 1971 (State University of New York at Stony Brook); Ph.D., 1980 (University of Pennsylvania)
- Arjun L. Adlakha** (1975), *Adjunct Associate Professor of Biostatistics* – B.Sc., 1958, M.Sc., 1960 (Agra University, India); M.A., 1962 (University of Delhi, India); M.A., 1969, Ph.D., 1970 (Michigan)
- Libero Ajello** (1964), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – A.B., 1939, M.A., 1940, Ph.D., 1947 (Columbia)
- Michael Aitken** (1987), *Instructor of Environmental Sciences and Engineering* – B.S., 1978 (State University of New York); M.S., 1980 (University of California); Ph.D., 1988 (University of Notre Dame)
- Phillip William Albro** (1981), *Adjunct Associate Professor of Environmental Sciences and Engineering* – B.A., 1961 (University of Rochester); Ph.D., 1968 (St. Louis University)
- Timothy E. Aldrich** (1988), *Adjunct Assistant Professor of Epidemiology* – B.S., 1972, M.P.H., 1979 (University of Alabama at Birmingham); Ph.D., 1985 (University of Texas at Houston)
- Francesca Allegrì** (1985), *Clinical Instructor of Health Policy and Administration* – B.A., 1975 (Illinois Wesleyan University, Bloomington); M.L.S., 1978 (University of Illinois, Urbana)

- James Elmore Allen** (1968), *Associate Professor of Health Policy and Administration, and Senior Research Associate, Carolina Population Center* – B.A., 1957 (Arizona); S.T.B., 1960, Ph.D., 1964 (Boston); M.S.P.H., 1969 (The University of North Carolina at Chapel Hill)
- John R. Allen** (1973), *Adjunct Instructor in Health Behavior and Health Education* – B.S., 1950 (Wake Forest); M.S.P.H., 1952 (The University of North Carolina)
- Naomar Almeida-Filho** (1986), *Adjunct Associate Professor of Epidemiology* – M.D., 1976 (Famed-Ufba, Brazil); M.P.H., 1978 (University of Bahia, Brazil); Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- Ingrid A. Amara** (1985), *Adjunct Assistant Professor of Biostatistics* – B.S., 1969, (Arizona State University, Tempe); M.S.P.H., 1975, Dr.P.H., 1983, (University of North Carolina at Chapel Hill)
- Deborah A. L. Amaral** (1988), *Assistant Professor of Environmental Sciences and Engineering* – B.A., 1979 (Reed College); M.S., 1981, Ph.D., 1983 (Carnegie-Mellon University)
- John J. B. Anderson** (1971), *Professor of Nutrition* – B.A., 1956 (Williams College); M.A.T., 1958 (Harvard University); M.A., 1962 (Boston University); Ph.D., 1966 (Cornell University)
- Dragana Andjelkovich** (1973), *Adjunct Associate Professor of Epidemiology* – M.D., 1958 (University of Belgrade, Yugoslavia); M.P.H., 1963, Dr.P.H., 1969 (Johns Hopkins)
- Richard N. L. Andrews** (1981), *Professor of Environmental Sciences and Engineering, Professor of City and Regional Planning, Professor of Health Policy and Administration, and Director of the Institute of Environmental Studies* – A.B., 1966, M.R.P., 1970 (Yale University); Ph.D., 1972 (The University of North Carolina at Chapel Hill)
- Marilyn Kay Asay** (1980), *Adjunct Assistant Professor of Public Health Nursing* – Diploma, 1964 (Nebraska Methodist Hospital School of Nursing); B.S., 1964 (Nebraska Wesleyan University); M.S., 1980 (The University of North Carolina at Chapel Hill)
- Thomas J. Bacon** (1976), *Adjunct Associate Professor of Health Policy and Administration* – M.A., 1971 (University of Chicago); Dr.P.H., 1977 (The University of North Carolina at Chapel Hill)
- James D. Bader** (1986), *Clinical Associate Professor of Health Policy and Administration* – B.S., 1966; D.D.S., 1970; M.P.H., 1973; and Certificate, Dental Public Health, 1974 (University of Michigan)
- Donna D. Baird** (1986) *Assistant Professor of Epidemiology* – B.A., 1968 (MacLaster College, St. Paul, MN); Ph.D., 1980 (University of Minnesota); M.P.H., 1984 (The University of North Carolina at Chapel Hill)
- Louise M. Ball** (1984), *Assistant Professor of Environmental Sciences and Engineering* – B.Sc., 1972 (University of Bristol, England); Ph.D., 1976 (St. Mary's Hospital Medical School, University of London)
- Shrikant Ishver Bangdiwala** (1980); *Research Assistant Professor of Biostatistics* – B.S., 1975, M.S., 1978, Ph.D., 1980 (The University of North Carolina at Chapel Hill)
- Ralph S. Baric** (1986), *Assistant Professor of Parasitology and Laboratory Practice* – B.S., 1977; and Ph.D., 1982 (North Carolina State University at Raleigh)
- William E. Barkley** (1980), *Adjunct Professor, Parasitology and Laboratory Practice* – B.C.E., 1961 (University of Virginia); M.S., 1966, Ph.D., 1972 (University of Minnesota)
- Robert C. Barnes** (1985), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – Graduate Fellow, 1975 (University of Texas, Dallas); M.D., 1979 (University of Texas, Southwestern Medical School, Dallas)
- Howard Barnhill** (1973), *Clinical Professor of Health Behavior and Health Education Emeritus* (1983), – B.S., 1938 (A & T State University); M.S.P.H., 1958 (North Carolina Central)

- Harriet Hylton Barr** (1965), *Clinical Associate Professor of Health Behavior and Health Education and Assistant Dean of Alumni Affairs and Public Relations*, — A.B., 1945 (Duke); M.P.H., 1948 (The University of North Carolina)
- Carolyn J. Barrett** (1977), *Clinical Instructor of Nutrition*—B.S., 1970 (Pennsylvania State University); M.S., 1972 (University of Kansas); M.P.H., 1977 (Tulane University)
- Patricia Z. Barry**, (1972), *Associate Professor of Health Policy and Administration* — B.A., 1957 (Stanford); M.A., 1960 (California); Dr.P.H., 1972 (The University of North Carolina at Chapel Hill)
- Karl E. Bauman** (1966), *Professor of Health Behavior and Health Education* — A.B., 1961, M.A., 1963 (Nebraska); Ph.D., 1965 (Florida State)
- William Fred Baxter** (1979), *Lecturer of Health Policy and Administration* — A.B., 1952 (Guilford College); M.Ed., 1957 (The University of North Carolina at Greensboro); C.A.S.E., 1965 (Johns Hopkins)
- Christine Bazzarre** (1988), *Adjunct Assistant Professor of Nutrition* — B.S., 1971, M.S., 1974 (Virginia Polytechnic Institute and State University)
- Dan E. Beauchamp** (1972), *Professor of Health Policy and Administration, School of Public Health and Associate Professor of Social and Administrative Medicine, School of Medicine* — A.B., 1962 (University of Texas); M.A., 1971, Ph.D., 1973 (Johns Hopkins University)
- James Beck** (1989), *Adjunct Professor of Epidemiology* — A.B., 1964, M.S., 1967, Ph.D., 1969, (The University of North Carolina at Chapel Hill)
- Mary Caroline Becker** (1965), *Associate Professor of Epidemiology* — A.B., 1946 (Vanderbilt); M.D., 1950 (Johns Hopkins)
- Deborah E. Bender** (1976), *Clinical Assistant Professor of Maternal and Child Health* — B.A., 1969 (Boston College); Ph.D., 1980 (The American University); M.P.H., 1981 (The University of North Carolina at Chapel Hill)
- Michael A. Berry** (1986), *Adjunct Associate Professor of Environmental Sciences and Engineering* — B.S., 1965; M.S., 1969 (Gonzaga University, Spokane, WA); M.S., 1974 (Duke University); Ph.D., 1984 (The University of North Carolina at Chapel Hill)
- Helen T. Bhattacharyya** (1988), *Adjunct Assistant Professor of Biostatistics* — B.A., 1960 (Swarthmore College); M.S., 1962 (North Carolina State University at Raleigh); Ph.D., 1973 (The University of North Carolina at Chapel Hill)
- Pouru P. Bhiwandiwala** (1980), *Adjunct Associate Professor of Maternal and Child Health* — M.B., 1968, B.S., 1968 (Bombay University); M.C.P.S., 1969, D.G.O., 1971, D.F.P., 1972, F.C.P.S., 1973 (College of Physicians and Surgeons); M.D., 1973 (Bombay University); M.S.P.H., 1977 (The University of North Carolina at Chapel Hill)
- Carol Bigelow** (1985), *Adjunct Assistant Professor of Biostatistics* — B.A., 1978 (Skidmore College, Saratoga, NY); M.S., 1982, Ph.D., 1984 (University of Washington)
- Richard E. Billsborrow** (1972), *Research Professor of Biostatistics* — B.A., 1963 (Carleton); M.A., 1966, Ph.D., 1968 (Michigan)
- Linda S. Birnbaum** (1980), *Adjunct Associate Professor of Environmental Sciences and Engineering* — B.A., 1967 (University of Rochester); M.S., 1969, Ph.D., 1972 (University of Illinois)
- Susan Blalock** (1987), *Adjunct Assistant Professor of Health Behavior and Health Education*—B.S., 1976, M.P.H., 1980 (University of Michigan); Ph.D., 1987 (The University of North Carolina at Chapel Hill)
- Carl H. Blank** (1983), *Adjunct Associate Professor of Parasitology and Laboratory Practice* — B.S., 1950 (Toledo University); M.S., 1957 (Utah State University); M.P.H., 1965, Dr.P.H., 1967 (The University of North Carolina at Chapel Hill)

- Dan G. Blazer** (1986), *Adjunct Professor of Epidemiology* – B.A., 1965 (Vanderbilt University); M.D., 1969 (University of Tennessee); M.P.H., 1979; Ph.D., 1980 (The University of North Carolina at Chapel Hill)
- Marvin Jerrold Block** (1972), *Associate Professor of Dental Oncology, School of Dentistry and Adjunct Associate Professor Health Policy and Administration, School of Public Health* – B.S., 1943, D.D.S., 1946 (Ohio State); M.P.H., 1972 (Minnesota)
- Ralph H. Boatman, Jr.** (1960), *Professor of Health Behavior and Health Education, School of Public Health, Director of the Office of Continuing Education in the Health Sciences* – B.S.Ed., 1943 (Southern Illinois); M.P.H., 1947, Ph.D., 1954 (The University of North Carolina)
- Brian A. Boehlecke** (1982), *Clinical Associate Professor of Epidemiology* – B.S., 1966 (Cornell University); M.D., 1970 (State University of New York – Buffalo); M.S.P.H., 1981 (The University of North Carolina at Chapel Hill)
- Mary Bobbitt-Cooke** (1988), *Adjunct Instructor of Health Behavior and Health Education* – B.A., 1966 (Washington University at St. Louis); M.P.H., 1986 (The University of North Carolina at Chapel Hill)
- Lawrence Brenner** (1986), *Clinical Associate Professor of Health Policy and Administration* – B.A., 1968 (Wayne State University); Law, 1971 (Boston College School of Law)
- Lou K. Brewer** (1987), *Lecturer of Public Health Nursing* – B.S., 1971, M.P.H., 1977 (The University of North Carolina at Chapel Hill)
- John Briscoe** (1981), *Adjunct Associate Professor of Environmental Engineering* – B.S., 1969 (University of Capetown South Africa); M.S., 1972, Ph.D., 1976 (Harvard University)
- W. Eugene Broadhead** (1987), *Adjunct Assistant Professor of Epidemiology* – B.S., 1977 (Davidson College); M.P.H., 1980 (The University of North Carolina at Chapel Hill); M.D., 1981 (Duke University); Ph.D., 1987 (The University of North Carolina at Chapel Hill)
- Edward F. Brooks** (1972), *Associate Vice Chancellor for Health Sciences and Adjunct Assistant Professor of Health Policy and Administration* – B.A., 1965 (Bates College, Maine); M.B.A., 1967 (Cornell University); Dr.P.H., 1985 (The University of North Carolina at Chapel Hill)
- John Bill Brooks** (1973), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1962 (Western Carolina University); Ph.D., 1969 (Virginia Polytechnic Institute)
- Dolores S. Brookshire** (1987), *Adjunct Instructor of Public Health Nursing* – B.S.N., 1983 (The University of North Carolina at Greensboro); M.S., 1987 (The University of North Carolina at Chapel Hill)
- J. Trig Brown** (1988), *Adjunct Assistant Professor of Epidemiology* – M.D., 1977 (Washington University); M.P.H., 1987 (The University of North Carolina at Chapel Hill)
- Dorothy C. Browne** (1981), *Assistant Professor of Maternal and Child Health* – B.A., 1969 (Bennett College); M.S.W., 1972 (University of Pittsburgh); M.P.H., 1974, Dr.P.H., 1980 (Harvard University)
- Rebecca Broach Bryan** (1959), *Associate Professor of Nutrition, Emerita (1977)* – B.S., 1934, M.S., 1944 (Georgia); M.P.H., 1952 (The University of North Carolina)
- Douglas S. Campbell** (1989), *Adjunct Assistant Professor of Epidemiology* – A.B., 1968 (Carleton College); M.D., 1977 (University of Hawaii); M.P.H., 1985 (The University of North Carolina at Chapel Hill)
- Moses Carey, Jr.** (1981), *Adjunct Assistant Professor of Health Policy and Administration* – M.S.P.H., 1972, J.D., 1980 (The University of North Carolina at Chapel Hill)
- Edward L. Cavanaugh** (1978), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – A.A., 1949 (Mars Hill College); B.S., 1951 (East Carolina); M.P.H., 1963 (The University of North Carolina at Chapel Hill); Dr.P.H., 1968 (California, Berkeley)

- Elmer F. Chaffee** (1966), *Associate Professor of Parasitology and Laboratory Practice, Emeritus (1976)* – B.S., 1938 (Idaho); M.S.P.H., 1947 (The University of North Carolina); Ph.D., 1952 (Duke)
- Lloyd E. Chambless** (1981), *Research Associate Professor of Biostatistics* – A.B., 1964, (University of Florida, Gainesville); M.A. 1969 (University of Illinois, Urbana); Ph.D., 1979, (The University of North Carolina at Chapel Hill)
- Edward L. Chaney** (1979), *Adjunct Professor of Radiological Hygiene, Department of Environmental Sciences and Engineering and Associate Professor of Radiology, School of Medicine* – B.S., 1965 (Millsaps College); Ph.D., 1969 (University of Tennessee)
- Emil Theodore Chanlett** (1946), *Professor of Sanitary Engineering, Emeritus (1981)* – B.S., 1937 (College of the City of New York); M.S.P.H., 1939 (Columbia); M.S.S.E., 1941 (The University of North Carolina)
- Sotiros D. Chaparas** (1982), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1951 (Northeastern University); M.S., 1953 (University of Massachusetts at Amherst); Ph.D., 1959 (St. Louis University)
- John F. Chapman** (1980), *Clinical Associate Professor of Parasitology and Laboratory Practice and Assistant Professor of Pathology and Associate Director, Clinical Biochemistry Laboratories and Director, Central Clinical Chemistry Laboratory* – B.A., 1968 (California State University – San Jose); M.A., 1972 (California State University – Fresno); M.P.H., 1976, Dr.P.H., 1978 (The University of North Carolina at Chapel Hill)
- M. Judith Charles** (1987), *Research Assistant Professor of Environmental Sciences and Engineering* – B.S., 1974 (University of Vermont); M.S., 1979 (University of Florida); Ph.D., 1984 (University of Michigan)
- Barbara O. Chavious** (1986), *Clinical Instructor of Health Policy and Administration* – B.A., 1968 (Miami University of Ohio); M.P.H., 1985 (The University of North Carolina at Chapel Hill)
- Thomas J. Chegash** (1980), *Adjunct Assistant Professor of Nutrition* – B.S., 1971 (Cornell University); M.B.S., 1977 (George Washington University)
- Sidney Shaw Chipman** (1950), *Professor of Maternal and Child Health, Emeritus (1970)* – B.A., 1924 (Acadia); M.D., 1928 (McGill); M.P.H., 1947 (Yale); D.Sc.Hon., 1971 (Acadia)
- David H. Christiansen** (1982), *Research Assistant Professor of Biostatistics* – B.S., 1968 (University of Idaho); M.B.A., 1970 (University of Washington) M.S.P.H., 1977, Dr.P.H., 1982 (The University of North Carolina at Chapel Hill)
- Russell Fabrique Christman** (1973), *Professor of Environmental Sciences and Chair of the Department of Environmental Sciences and Engineering* – B.S., 1958, M.S., 1960, Ph.D., 1962 (Florida)
- Larry D. Claxton** (1982), *Adjunct Assistant Professor of Environmental Sciences and Engineering* – B.S., 1967 (Middle Tennessee State University); M.S., 1971 (Memphis State University); Ph.D., 1980 (North Carolina State University)
- Maria Clay** (1989), *Adjunct Instructor of Health Policy and Administration* – B.S., 1972, M.Ed., 1976 (East Carolina University)
- Nora Francis Cline** (1961), *Associate Professor of Public Health Nursing, Emerita (1978)* – R.N., 1945, B.S., 1945 (Duquesne); M.L., 1947 (Pittsburgh)
- Thomas Cole** (1988), *Visiting Instructor in Epidemiology* – B.A., 1977 (University of Texas at Austin), M.D., 1981 (Baylor College of Medicine)
- Gwen W. Collman** (1986), *Adjunct Assistant Professor of Epidemiology* – B.S., 1977 (State University of New York); M.P.H., 1979 (University of Michigan); Ph.D., 1984 (The University of North Carolina at Chapel Hill)
- Charles A. Cook** (1982), *Adjunct Associate Professor of Health Behavior and Health Education* – B.A., 1971, (Tougaloo college); M.D., 1975 (Tufts University); M.P.H., 1975 (Harvard School of Public Health)

- Harold L. Cook** (1984), *Clinical Assistant Professor of Health Behavior and Health Education* – A.B., 1966, M.S.W., 1969, Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Warren A. Cook** (1971), *Adjunct Professor of Industrial Health in the Department of Environmental Sciences and Engineering* – A.B., 1923 (Dartmouth)
- Robert Cannon Cooksey** (1984), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1972 (Emory University); M.S., 1975 (Medical University of South Carolina); Ph.D., 1983 (University of Georgia)
- Joan Cornoni-Huntley** (1966), *Adjunct Professor of Epidemiology* – B.A., 1953 (Mary Washington) M.P.H., 1962, Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- Elizabeth Jackson Coulter** (1965), *Professor of Biostatistics* – A.B., 1941 (Swarthmore); A.M. 1946, Ph.D., 1948 (Radcliffe)
- Herbert W. Cox** (1983), *Adjunct Professor of Parasitology and Laboratory Practice* – A.B., 1941, M.P.H., 1948, Ph.D., 1952 (The University of North Carolina at Chapel Hill)
- Douglas J. Crawford-Brown** (1982), *Assistant Professor of Environmental Sciences and Engineering* – B.S., 1975, M.S., 1977, Ph.D., 1980 (Georgia Institute of Technology)
- John P. Creason** (1978), *Adjunct Associate Professor of Biostatistics* – B.S., 1964, M.S., 1967 (University of Missouri); Ph.D., 1978 (The University of North Carolina at Chapel Hill)
- John R. Crouse** (1985), *Adjunct Associate Professor of Epidemiology* – B.A., 1961 (University of Michigan); M.D., 1969 (State University of New York)
- Frank V. Crout** (1985), *Adjunct Assistant Professor of Parasitology and Laboratory Practice* – B.S., 1974 (University of Central Florida); M.S., 1977, M.B.A., 1981, Ph.D., 1981 (University of Kentucky)
- Lester Curtin** (1987), *Adjunct Associate Professor of Biostatistics* – B.S., 1973, Ph.D., 1978 (The University of North Carolina at Chapel Hill)
- Nguyen Dat** (1987), *Adjunct Assistant Professor of Biostatistics* – B.S., 1972 (University of Saigon, Vietnam); M.A., 1975, M.S., 1978 (University of Florida); Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- Harry Daugharty** (1977), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – A.B., 1961 (Emory); M.S., 1965, Ph.D., 1967 (Medical College of Georgia)
- Clarence Edward Davis** (1972), *Professor of Biostatistics* – B.A., 1963 (Howard Payne College); M.S., 1965 (Tulane); Ph.D., 1970 (North Carolina State University)
- Deborah V. Dawson** (1985), *Adjunct Assistant Professor of Biostatistics* (1985) – B.A., 1974 (Montclair State College, New Jersey); Sc.M., 1976 (John Hopkins University); Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- Leonard H. Dawson** (1966), *Clinical Associate Professor of Health Behavior and Health Education* – A.B., 1960 (Kentucky); M.S.P.H., 1963 (The University of North Carolina at Chapel Hill)
- Henry D. Debnam** (1983), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.S., 1972 (St. Augustine's College); M.P.H., 1974 (The University of North Carolina at Chapel Hill)
- Julie L. C. DeClerque** (1988), *Adjunct Assistant Professor in Maternal and Child Health* – B.A., 1975 (Kirkland College); M.P.H., 1982 (Tulane University); Dr.P.H., 1987 (The University of North Carolina at Chapel Hill)
- Gordon H. DeFries** (1971), *Professor of Social Administrative Medicine, Clinical Professor Epidemiology, Adjunct Professor of Health Policy and Administration and Director, Health Services Research Center* – B.S., 1963 (Middle Tennessee State); M.A., 1966, Ph.D., 1967 (University of Kentucky)
- David Mahlon DeLong** (1979), *Adjunct Associate Professor in Biostatistics* – B.A., 1969 (University of Maine, Orono); M.S., 1975, Ph.D., 1979 (The University of North Carolina at Chapel Hill)

- Elizabeth Ray DeLong** (1979), *Adjunct Assistant Professor in Biostatistics* – B.A., 1969, M.A., 1970 (University of Maine, Orono); Ph.D., 1979 (The University of North Carolina at Chapel Hill)
- John M. Dement** (1981), *Adjunct Associate Professor of Air and Industrial Hygiene* – B.S., 1971 (North Carolina State University); M.S., 1972 (Harvard University); Ph.D., 1980 (The University of North Carolina at Chapel Hill)
- Gaston DesHarnais** (1989), *Lecturer of Health Policy and Administration* – B.A., 1955 (Sacred Heart College); Bachelor of Divinity, 1957, M.Divinity, 1959 (Georgian University of Rome, Italy); M.A., 1969, Ph.D., 1977 (University of Michigan)
- Susan DesHarnais** (1988), *Visiting Associate Professor of Health Policy and Administration* – B.A., 1967; M.P.H., 1969; Ph.D., 1983 (University of Michigan at Ann Arbor)
- Brenda McEvoy DeVellis** (1978), *Associate Professor of Health Behavior and Health Education* – B.A., 1969 (Massachusetts); M.A., 1973 (Connecticut College); Ph.D., 1978 (George Peabody College)
- Robert DeVellis** (1981), *Research Assistant Professor of Health Behavior and Health Education and Assistant Director of Rehabilitation Program, School of Medicine* – B.S., 1970 (University of Massachusetts); M.A., 1973 (Connecticut College-Ct.); Ph.D., 1977 (George Peabody College)
- Francis A. DiGiano** (1981), *Professor of Water Resources Engineering in the Department of Environmental Sciences and Engineering* – B.S.C.E., 1964 (University of Massachusetts); M.S.C.E., 1965 (Tufts University); Ph.D., 1969 (University of Michigan)
- Raphael J. DiNapoli, Jr.** (1981), *Lecturer in Maternal and Child Health* – B.A., 1955 (Holy Cross College); M.D., 1959 (State University of New York); M.P.H., 1964 (Harvard University)
- Arthur F. DiSalvo** (1985), *Adjunct Professor of Parasitology and Laboratory Practice* – B.S., 1954; M.S., 1958 (University of Arizona); M.D., 1965 (Medical College of Georgia, Augusta)
- James P. Dixon** (1976), *Clinical Professor Health Policy and Administration* – B.S., 1939 (Antioch); M.D., 1943 (Harvard); M.S., 1947 (Columbia)
- William W. Dow** (1984), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.S., 1967, M.D., 1974 (Vanderbilt University)
- Bryan Dowd** (1988), *Visiting Associate Professor in Health Policy and Administration* – B. Architecture, 1972 (Georgia Institute of Technology); M.S., 1976 (Georgia State University); Ph.D., 1982 (University of Pennsylvania)
- Walter R. Dowdle** (1965), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1955, M.S., 1957 (Alabama); Ph.D., 1960 (Maryland)
- Vulus Raymond Dowell, Jr.** (1967), *Adjunct Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1961 (Kentucky); M.S., 1962, Ph.D., 1966 (Cincinnati)
- George Grundy Dudney** (1967), *Adjunct Professor of Health Policy and Administration* – B.S., 1951 (Tennessee Tech.); D.D.S., 1953 (Tennessee); M.P.H., 1962 (The University of North Carolina)
- Michael F. Durfee**, (1977), *Associate Professor of Pediatrics and Lecturer in Maternal and Child Health, School of Public Health* – B.A., 1959 (Ohio); M.D., 1963 (Virginia); M.P.H., 1977 (The University of North Carolina at Chapel Hill)
- Jo Anne L. Earp** (1975), *Associate Professor of Health Behavior and Health Education* – B.A., 1965 (Bryn Mawr); Sc.D., 1974 (Johns Hopkins)
- Elizabeth Merrill Edmands** (1967), *Associate Professor of Public Health Nursing, Emerita* (1979) – R.N., 1936 (Rhode Island Hospital); B.S.P.H.N., 1943 (Michigan); M.A., 1955 (Columbia)

- Joseph Chike Edozien** (1971), *Professor of Nutrition* – B.Sc., 1948, M.Sc., 1950, M.B., B.Ch., 1951, M.D., 1954 (National University of Ireland); M.R.C.P., 1954, F.R.C.P., 1963 (Edinburgh); D.Sc., (Hon), 1963 (Rio de Janeiro); F.R.C.Path., 1967 (England)
- Robert W. Edwards** (1981), *Clinical Assistant Professor of Parasitology and Laboratory Practice* – A.S., 1970 (Prestonburg Community College); B.S., 1974 (University of Kentucky); M.S., 1977 (Eastern Kentucky University, Richmond); Ph.D. (University of Arkansas)
- Merril Eisenbud** (1984), *Adjunct Professor of Environmental Sciences and Engineering* – B.S.Ed., 1936 (New York University); Sc.D., 1960 (Fairleigh Dickinson University); D.H.C., 1971 (Catholic University of Rio de Janeiro)
- Regina Cecylia Elandt-Johnson** (1964), *Professor of Biostatistics, Emerita* (1985) – M.S., 1946 (University of Poznan, Poland); Ph.D., 1955 (Poznan Agricultural University)
- Robert Claude Elston** (1964), *Adjunct Professor in Biostatistics* – B.A., 1955, Dip.Ag., 1956, M.A., 1957 (Cambridge); Ph.D., 1959 (Cornell)
- Eugenia Eng** (1980), *Assistant Professor of Health Behavior and Health Education* – B.S., 1970 (University of Wisconsin); M.P.H., 1978, Dr.P.H., 1983 (The University of North Carolina at Chapel Hill)
- Richard B. Everson** (1988), *Adjunct Professor of Epidemiology* – B.S., 1968, (Trinity College); M.D., 1972 (University of Rochester); M.P.H., 1985 (The University of North Carolina at Chapel Hill)
- Anita Manders Farel** (1973), *Clinical Assistant Professor of Maternal and Child Health* – A.B., 1966 (University of California); M.S.W., 1968 (University of California at Los Angeles); Dr.P.H., 1979 (The University of North Carolina at Chapel Hill)
- John J. Farmer III** (1973), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1965 (Georgia Institute of Technology); Ph.D., 1968 (Georgia)
- MaryAnn C. Farthing** (1978), *Clinical Associate Professor of Nutrition* – B.S., 1954 (The North Carolina College for Women at Greensboro); M.S., 1957 (University of Tennessee); Ph.D., 1974 (The University of North Carolina at Greensboro)
- John C. Feeley** (1968), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – A.A., 1953 (Los Angeles City College); A.B., 1955, Ph.D., 1958 (University of California at Los Angeles)
- Laurel A. Files** (1968), *Associate Professor and Associate Chair of Health Policy and Administration* – B.A., 1960 (Hofstra College); M.A., 1963 (Yale); Ph.D., 1978 (The University of North Carolina at Chapel Hill)
- Tekola Fissheha** (1988), *Adjunct Instructor of Health Behavior and Health Education* – B.A., 1977, M.P.H., 1980 (The University of North Carolina at Chapel Hill)
- William Shoemaker Flash** (1964), *Associate Professor of Health Policy and Administration, Clinical Associate Professor of Psychiatry, Emeritus* (1985) – A.B., 1948, M.P.A., 1950, Ph.D., 1954 (Harvard)
- Robert H. Fletcher** (1978), *Professor of Medicine and Clinical Professor of Epidemiology, School of Public Health* – B.A., 1962 (Wesleyan); M.D., 1966 (Harvard); M.Sc., 1973 (Johns Hopkins)
- Suzanne W. Fletcher** (1978), *Professor of Medicine and Clinical Professor of Epidemiology, School of Public Health* – B.A., 1962 (Swarthmore) M.D., 1966 (Harvard); M.S., 1973 (Johns Hopkins)
- Michael Flynn** (1986), *Assistant Professor of Environmental Sciences and Engineering* – B.S., 1979 (Central Connecticut State University); M.S., 1982; D.S., 1986 (Harvard University)
- Judith A. Fortney** (1987), *Adjunct Associate Professor of Epidemiology* – B.Sc., 1959 (London School of Economics); M.S., 1963 (University of Wisconsin); Ph.D., 1971 (Duke University)

- Donald Lee Fox** (1973), *Professor of Air Hygiene in the Department of Environmental Sciences and Engineering, Associate Dean for Academic Programs, School of Public Health* – B.S., 1965 (Wichita State); Ph.D., 1971 (Arizona State)
- Donald Edward Francisco** (1970), *Lecturer in the Department of Environmental Sciences and Engineering* – B.A., 1964, M.A., 1966 (North Texas State); Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- David Allison Fraser** (1961), *Professor of Industrial Hygiene in the Department of Environmental Sciences and Engineering* – B.A., 1947 (Pennsylvania); M.S., 1956 (Xavier); Sc.D., 1961 (Cincinnati)
- Deborah A. Freund** (1979), *Adjunct Associate Professor of Health Policy and Administration* – A.B., 1972 (Washington University); M.P.H., 1974, M.A., 1975, Ph.D., 1980 (University of Michigan)
- Moye Wicks Freymann** (1966), *Professor of Health Policy and Administration* – B.S., 1945 (Yale), M.D., 1948 (Johns Hopkins); M.P.H., 1956, Dr.P.H., 1960 (Harvard)
- Edward L. Frome** (1980), *Adjunct Associate Professor of Biostatistics* – B.S., 1964, M.S., 1966 (University of Florida); Ph.D., 1972 (Emory University)
- John G. Fryer** (1971), *Research Professor of Biostatistics* – B.Sc., 1960; Ph.D., 1964 (University of London)
- Estelle M. Fulp** (1979), *Adjunct Associate Professor of Public Health Nursing* – Diploma in Nursing 1944 (Braddock General Hospital, Penn.); B.S.P.H.N., 1962 (Duquesne); M.P.H., 1966 (The University of North Carolina at Chapel Hill)
- Philip Gallagher** (1987), *Lecturer of Biostatistics* – S.B., 1957, (Massachusetts Institute of Technology); M.Sc., 1963 (University of London, England)
- George W. Gary** (1985), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1969 (Georgia State University); M.P.H., 1973; Dr.P.H., 1975 (The University of North Carolina at Chapel Hill)
- Rose Geraldine George** (1966), *Associate Professor, Emerita, of the School of Nursing, and Assistant Professor, Emerita, School of Public Health (1980)* – Dip. Nursing, 1941 (Massachusetts Memorial Hospital, Boston); R.N., B.S., 1951 (Wayne State); M.S., 1966 (The University of North Carolina at Chapel Hill)
- Benjamin Gilbert** (1982), *Clinical Assistant Professor of Health Policy and Administration* – B.G.S., 1972 (University of Michigan); M.P.H., 1976, J.D., 1979 (The University of North Carolina at Chapel Hill)
- Avram Gold** (1979), *Professor of Environmental Sciences and Engineering* – B.A., 1963, Ph.D., 1969, M.S., 1973 (Harvard University)
- Marsha Gold** (1986), *Adjunct Assistant Professor of Health Policy and Administration* – B.S., 1969 (Cornell University); M.S., 1971 (Massachusetts Institute of Technology); M.P.H., 1976 (University of California at Berkeley); S.D., 1979 (Harvard University)
- Robert M. Goodman** (1987), *Research Assistant Professor of Health Behavior and Health Education* – B.A., 1971 (Brooklyn College); M.A., 1975, M.P.H., 1977 (University of Hawaii); Ph.D., 1987 (The University of North Carolina at Chapel Hill)
- Hilton Thomas Goulson** (1957), *Professor of Parasitology and Laboratory Practice* – A.B., 1952 (Luther); M.S.P.H., 1953, Ph.D., 1957 (The University of North Carolina)
- Geraldine Gourley** (1963), *Associate Professor of Maternal and Child Health, Emerita (1980)* – Ph.B., 1935 (Washburn); M.S.S.W., 1942 (Chicago)
- Richard C. Graves** (1986), *Research Associate Professor of Epidemiology, Clinical Associate Professor of Health Policy and Administration* – D.D.S., 1954; M.P.H., 1969; Dr.P.H. 1971 (University of Michigan)
- Sue M. Gray** (1985), *Adjunct Instructor of Health Behavior and Health Education* – B.A., 1972 (University of Missouri); M.P.H., 1974 (The University of North Carolina at Chapel Hill)

- Raymond S. Greenberg** (1984), *Adjunct Associate Professor of Epidemiology* – B.A., 1976 (The University of North Carolina at Chapel Hill); M.P.H., 1979 (Harvard); M.D., 1979 (Duke University); Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Sandra B. Greene** (1978), *Adjunct Associate Professor of Biostatistics* – B.A., 1971, M.S.P.H., 1972, Dr.P.H., 1977 (The University of North Carolina at Chapel Hill)
- Betty B. Griffith** (1989), *Adjunct Assistant Professor of Public Health Nursing* – B.S., 1974 (Winston-Salem State University); M.A., 1976 (Appalachian State University)
- Jack D. Griffith** (1987), *Adjunct Professor of Epidemiology* – Ph.D., 1969 (University of Oklahoma)
- James Ennis Grizzle** (1960), *Professor Emeritus of Biostatistics* (1989) – B.S., 1951 (Berea College); M.S., 1953 (Virginia Polytechnic Institute); Ph.D., 1960 (North Carolina State)
- Harry Guess** (1988), *Adjunct Associate Professor of Epidemiology and Biostatistics* – B.S., M.S., 1964 (Georgia Tech University); Ph.D., 1972 (Stanford University); M.D., 1979 (University of Miami)
- Priscilla Alden Guild** (1971), *Adjunct Instructor in Biostatistics, Research Associate, Health Services Research Center* – B.S., 1966 (Wilson College); M.S.P.H., 1971 (The University of North Carolina at Chapel Hill)
- Frances Osborne Gust** (1962), *Assistant Professor of Health Policy and Administration, Emerita* (1971) – A.B., 1929 (Guilford); M.P.H., 1956 (The University of North Carolina)
- Pamela Haines** (1983), *Assistant Professor of Nutrition* – B.S., 1970 (Cornell University); M.S., 1977 (University of Florida); Dr.P.H., 1982 (The University of North Carolina at Chapel Hill)
- James E. Hall** (1982), *Associate Professor of Parasitology and Laboratory Practice* – B.S., 1971; M.S., 1974 (University of New Orleans); Ph.D., 1979 (Texas A & M)
- Curtis G. Hames** (1978), *Clinical Professor of Epidemiology* – B.S., 1941, M.D., 1944 (University of Georgia)
- Philip E. Hamrick** (1984), *Adjunct Associate Professor of Environmental Sciences and Engineering* – B.A., 1961, M.S., 1962 (North Carolina State University); Ph.D., 1968 (Medical College of Virginia)
- William H. Hannon** (1976), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1965 (Georgia State); Ph.D., 1972 (University of Tennessee)
- Ann Caton Hansen** (1958), *Associate Professor of Public Health Nursing, Emerita* (1970) – B.S., 1952 (Johns Hopkins); M.P.H., 1956 (The University of North Carolina)
- Sioban D. Harlow** (1988), *Research Assistant Professor of Epidemiology* – B.A., 1980 (University of California Berkeley); Ph.D., 1988 (Johns Hopkins University)
- Charles L. Harper** (1966) *Professor of Health Behavior and Health Education, Emeritus* (1984) – B.A., 1949, M.S.P.H., 1950 (The University of North Carolina); Ph.D., 1972 (The University of North Carolina at Chapel Hill)
- William Harper** (1982), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.S., 1971 (West Virginia University); M.A., 1974 (Marshall University); J.D., 1981 (Campbell University)
- Frank E. Harrell, Jr.** (1980), *Adjunct Associate Professor of Biostatistics* – B.S., 1973 (University of Alabama); Ph.D., 1979 (The University of North Carolina at Chapel Hill)
- Robert L. Harris, Jr.** (1973), *Professor of Environmental Sciences and Engineering* – B.S.Ch.E., 1949 (University of Arkansas); M.S., 1954 (Harvard University); Ph.D., 1972 (The University of North Carolina at Chapel Hill)
- Russell P. Harris** (1988), *Adjunct Assistant Professor of Epidemiology* – B.A., 1967, M.D., 1970 (Johns Hopkins University); M.P.H., 1987 (The University of North Carolina at Chapel Hill)

- Robert H. Harrison** (1985), *Adjunct Associate Professor of Parasitology and Laboratory Practice* — B.S., 1966 (Yale University); D.Phil., 1970 (Oxford University); M.D., 1974 (Harvard University) M.P.H., 1977 (University of Washington)
- Abraham G. Hartzema** (1984), *Clinical Associate Professor of Health Policy and Administration and Associate Professor, School of Pharmacy* — B.Sc., 1974, Pharm.D., 1976 (University of Utrecht); M.S.P.H., 1978 (University of Washington); Ph.D., 1982 (University of Minnesota)
- James Ronald Hass** (1975), *Adjunct Associate Professor of Environmental Sciences and Engineering* — B.A., 1967 (Appalachian State); Ph.D., 1972 (The University of North Carolina at Chapel Hill)
- John W. Hatch** (1971), *Professor of Health Behavior and Health Education* — B.A., 1957 (Knoxville College); M.S.W., 1959 (Atlanta); Dr.P.H., 1974 (The University of North Carolina at Chapel Hill)
- Charles L. Hatheway** (1979), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.Sc., 1957, M.Sc., 1961, Ph.D., 1964 (Ohio State)
- Mary Hawes** (1989), *Adjunct Assistant Professor of Health Policy and Administration* — B.A., 1967 (Principia College); Ph.D., 1982 (University of Texas)
- Carl G. Hayes** (1969), *Adjunct Professor of Epidemiology* — B.S., 1955 (Mercer); M.P.H., 1963, Ph.D., 1969 (The University of North Carolina at Chapel Hill)
- Donald M. Hayes** (1984), *Adjunct Professor of Epidemiology* — B.S., 1951 (Wake Forest University); M.D., 1954 (Bowman Gray University)
- Suzanne G. Haynes** (1975), *Adjunct Associate Professor of Epidemiology* — B.A., 1969 (University of Tennessee); M.A., 1970, M.P.H., 1972 (University of Texas); Ph.D., 1975 (The University of North Carolina at Chapel Hill)
- Sandra Headen** (1988), *Research Assistant Professor of Health Behavior and Health Education* — B.A., 1969 (Bennett College); M.A., 1974, Ph.D., 1982 (Boston College)
- Milton Sydney Heath, Jr.** (1957), *Professor of Public Law and Government and Professor of Water Resources in the Department of Environmental Sciences and Engineering* — A.B., 1949 (Harvard); LL.B., 1952 (Columbia)
- Gerardo Heiss** (1976), *Professor of Epidemiology* — M.D., 1968 (Chile); M.Sc.S.M., 1973 (London); Ph.D., 1976 (The University of North Carolina at Chapel Hill)
- Ronald William Helms** (1968), *Associate Professor of Biostatistics* — B.A., 1963, M.A., 1966 (Tennessee); Ph.D., 1969 (North Carolina State University)
- James Richard Hendricks** (1949), *Associate Professor of Parasitology and Laboratory Practice, Emeritus (1984)* — B.S., 1940 (Guilford); M.S., 1948, Ph.D., 1951 (The University of North Carolina)
- O. Marie Henry** (1981), *Adjunct Associate Professor of Public Health Nursing* B.S.N., 1964 (University of Virginia); M.S.N., 1971, D.N.S.C., 1975 (The Catholic University of America)
- William Theodore Herzog** (1964), *Associate Professor of Health Policy and Administration* — B.A., 1955 (Knox College); M.S.P.H., 1958 (The University of North Carolina)
- Siegfried H. Heyden** (1967), *Adjunct Professor of Epidemiology* — M.D., 1951 (University of Berlin); Ph.D., 1966 (University of Zurich)
- John L. S. Hickey** (1979), *Research Associate Professor Emeritus (1988) of Air and Industrial Hygiene in the Department of Environmental Sciences and Engineering* — B.S.C.E., 1948 (Texas Tech); M.S.S.E., 1949 (Harvard); M.S.P.H., 1974, Ph.D., 1977 (The University of North Carolina at Chapel Hill)
- James Everett Higgins** (1982), *Adjunct Assistant Professor of Epidemiology* — B.S., 1967 (North Carolina State University); M.S., 1969 (Cornell University); Ph.D., 1978 (The University of North Carolina at Chapel Hill)

- Marion E. Highriter** (1968), *Associate Professor and Deputy Chair for Student Affairs, Curriculum of Public Health Nursing and Associate Professor in Nursing* – B.A., 1950 (Mount Holyoke); M.N., 1953 (Yale); M.P.H., 1958, D.Sc., 1969 (Harvard)
- Gale B. Hill** (1981), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1959 (Florida State); Ph.D., 1966 (Duke University)
- Godfrey Hochbaum** (1972), *Professor of Health Behavior and Health Education Emeritus* (1988) – B.A., 1947 (American University); M.A., 1949 (George Washington University); Ph.D., 1953 (Minnesota)
- David Gerhard Hoel** (1971), *Adjunct Professor of Biostatistics* – A.G., 1961 (UCLA); Ph.D., 1966 (The University of North Carolina at Chapel Hill)
- Michael Hogan** (1975), *Adjunct Associate Professor of Epidemiology* – B.A., 1960 (De Pauw University); M.S., 1964, M.P.H., 1965, Ph.D., 1970 (University of North Carolina at Chapel Hill)
- Joseph L. Holliday** (1977), *Adjunct Associate Professor of Maternal and Child Health* – A.B., 1969 (The University of North Carolina at Chapel Hill); M.D., 1973 (Vanderbilt); M.P.H., 1975 (The University of North Carolina at Chapel Hill)
- Daniel Goodman Horvitz** (1973), *Adjunct Professor of Biostatistics* – B.S., 1943 (Massachusetts); Ph.D., 1953 (Iowa State)
- James D. Hosking** (1980), *Research Associate Professor of Biostatistics* – B.S., 1974 (Georgia Institute of Technology); M.A., 1978, Ph.D., 1980 (The University of North Carolina at Chapel Hill)
- Richard M. House** (1980), *Associate Dean and Director of Community Health Service and Clinical Associate Professor of Health Behavior and Health Education* – B.S., 1963 (East Carolina University); M.P.H., 1969 (The University of North Carolina at Chapel Hill); Ed.D., 1983 (North Carolina State University)
- David H. Howells** (1967), *Professor of Environmental Engineering in the Department of Environmental Sciences and Engineering, Emeritus* (1976) – B.S.C.E., 1949 (Oregon State); M.S.E., 1955 (Massachusetts Institute of Technology)
- Maynard Michael Hufschmidt** (1965), *Professor of City and Regional Planning and Professor of Environmental Sciences and Engineering, Emeritus* (1979) – B.S., 1939 (Illinois); M.P.A., 1955, D.P.A., 1964 (Harvard).
- Barbara Ann Hughes** (1979), *Adjunct Associate Professor of Nutrition* – B.S., 1960 (Carson-Newman College); M.S., 1963 (Ohio State University); M.R.E., 1968 (Southern Baptist Theological Seminary); M.P.H., 1972 (The University of North Carolina at Chapel Hill)
- John Thomas Hughes** (1960), *Professor of Health Policy and Administration, School of Public Health and Professor of Ecology, School of Dentistry, Emeritus* (1982) – B.S., 1940 (Wake Forest); D.D.S., 1947 (Maryland); M.P.H., 1958, Dr.P.H., 1962 (The University of North Carolina at Chapel Hill)
- Barbara S. Hulka** (1967), *Kenan Professor and Chair of Epidemiology, and Clinical Associate Professor of Family Medicine* – B.A., 1952 (Radcliffe); M.S., 1954 (Juilliard School of Music); M.D., 1959, M.P.H., 1961 (Columbia)
- Jaroslav Fabian Hulka** (1966), *Professor of Obstetrics and Gynecology, School of Medicine and Maternal and Child Health, School of Public Health* – B.S., 1952 (Harvard); M.D., 1956 (Columbia)
- Nancy Spruill Hunter** (1984), *Adjunct Assistant Professor of Parasitology and Laboratory Practice* – B.A., 1958 (Meredith College); M.P.H., 1972, Dr.P.H., 1980 (The University of North Carolina at Chapel Hill)
- Ronaldo Iachan** (1986), *Adjunct Assistant Professor of Biostatistics* – B.S., 1974; B.S., 1975 (Pontificia Universidade Catolica, Rio de Janeiro); M.S., 1978; Ph.D., 1980 (University of California at Berkeley)

- Michel A. Ibrahim** (1969), *Professor of Epidemiology and Dean, School of Public Health* – M.D., 1957 (Cairo); M.P.H., 1961, Ph.D., 1964 (The University of North Carolina at Chapel Hill)
- Lois Simmons Isler** (1977), *Adjunct Assistant Professor of Public Health Nursing* – B.S.N., 1966 (Hampton Institute); M.P.H., 1971, Cert.F.N.P, 1972 (The University of North Carolina at Chapel Hill)
- Michael H. Ivey** (1989), *Visiting Professor in Parasitology and Laboratory Practice* – B.S., 1951 (Auburn University); M.S.P.H., 1953, Ph.D., 1956 (The University of North Carolina at Chapel Hill)
- Ethel Jackson** (1980), *Clinical Instructor of Health Behavior and Health Education* – B.S., 1960 (Bennett College); M.P.H., 1973 (The University of North Carolina at Chapel Hill)
- Howard Newman Jacobson** (1978), *Clinical Professor of Maternal and Child Health Emeritus* (1988) – B.Sc., 1947, B.M., 1950, M.D., 1951 (Northwestern University Medical School)
- Sagar C. Jain** (1965), *Professor of Health Policy and Administration* – B.A., 1950, M.A., 1952 (Delhi); A.M., 1960 (Illinois); Ph.D., 1964 (Cornell)
- Sherman A. James** (1973), *Professor of Epidemiology and Clinical Professor of Psychology* – A.B., 1964 (Talladega College, Alabama); Ph.D., 1973 (Washington University)
- Joseph M. Janis** (1981), *Adjunct Associate Professor of Biostatistics* – B.S., 1957, M.S., 1961 (University of Pittsburgh); A.B., 1967 (St. Louis University); Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- Harvey Edward Jeffries** (1970), *Professor of Air Hygiene in the Department of Environmental Sciences and Engineering* – B.S., 1964 (Florida Presbyterian); M.S.P.H., 1967, Ph.D., 1971 (The University of North Carolina at Chapel Hill)
- William F. Jessee** (1980), *Adjunct Associate Professor of Health Policy and Administration and Social and Administrative Medicine* – A.B., 1968 (Stanford University); M.D., 1972 (University of California at San Diego)
- Eric Johnson** (1988), *Adjunct Assistant Professor of Epidemiology* – M.B., B.S., 1970 (University of Newcastle-Upon-Tyne England); D.T.P.H., 1972 (University of London, England); M.P.H., 1977 (Harvard University); Ph.D., 1984 (Johns Hopkins University)
- J. Donald Johnson** (1961), *Professor of Environmental Chemistry in the Department of Environmental Sciences and Engineering* – B.S., 1957 (UCLA); Ph.D., 1962 (The University of North Carolina)
- Richard Eugene Johnston** (1973), *Professor of Radiology and Adjunct Associate Professor in the Department of Environmental Sciences and Engineering* – B.S., 1956 (Akron); M.S., 1958, Ph.D., 1968 (Vanderbilt)
- William Dean Kalsbeek** (1978), *Associate Professor of Biostatistics* – B.A., 1968 (Northwestern College, Iowa); M.P.H., 1970, Ph.D., 1973 (Michigan)
- Arnold Daniel Kaluzny** (1967), *Professor of Health Policy and Administration* – B.S., 1960 (Wisconsin); M.H.A., 1962, Ph.D., 1967 (Michigan)
- Richard M. Kamens** (1984), *Research Associate Professor of Environmental Sciences and Engineering* – A.A.S., 1963 (Orange County Community College); B.A., 1965 (State University of New York at Buffalo); M.S.P.H., 1971 (The University of North Carolina at Chapel Hill)
- Kandiah Kanagaratnam** (1980), *Clinical Professor of Health Policy and Administration* – M.B.B.S., 1952, D.P.H., 1956 (University of Malaya)
- Berton H. Kaplan** (1960), *Professor of Epidemiology* – B.S., 1951 (Virginia Polytechnic Institute); M.S., 1952, Ph.D., 1962 (The University of North Carolina)
- Leo Kaufman** (1965), *Adjunct Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1952 (Brooklyn); M.S., 1955, Ph.D., 1958 (Kentucky)

- Mildred Kaufman** (1977), *Professor and Chair, Department of Nutrition* — B.S., 1947 (Simmons College); M.S., 1952 (Columbia University Teachers College)
- Walter M. Kemp** (1983), *Adjunct Professor of Parasitology and Laboratory Practice* — B.S.E., 1966 (Abilene Christian College); Ph.D., 1970 (Tulane)
- Alan P. Kendal** (1979), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.S., 1966 (London, England); Ph.D., 1968 (University College Hospital Medical School)
- John C. Key** (1971), *Adjunct Assistant Professor of Health Behavior and Health Education* — B.S., 1963 (North Carolina State); M.S.P.H., 1964 (The University of North Carolina at Chapel Hill); M.S.W., 1970, Ph.D., 1972 (Brandeis)
- Amin Khalil** (1983), *Adjunct Assistant Professor of Health Behavior and Health Education* — B.S., 1966, M.S., 1968 (East Tennessee State University); M.P.H., 1972 (The University of North Carolina at Chapel Hill)
- Michael P. Kiley** (1984), *Adjunct Associate Professor of Parasitology and Laboratory Practice* — B.S., 1964 (University of Notre Dame); M.S., 1967 (University of Missouri); Ph.D., 1972, (University of Virginia)
- Kerry E. Kilpatrick** (1987), *Professor and Chair of Health Policy and Administration* — B.S.E., 1963 (University of Michigan); M.B.A., 1963 (Harvard University); M.S., 1967, Ph.D., 1970 (University of Michigan)
- Betty George Kirkley** (1984), *Assistant Professor of Nutrition* — A.B., 1976 (The University of North Carolina at Chapel Hill); Ph.D., 1982 (Washington University)
- David Klein** (1987), *Adjunct Professor of Health Behavior and Health Education* — B.A., 1940 (City College of New York); M.A., (Columbia University)
- David G. Kleinbaum** (1970), *Professor of Biostatistics and Epidemiology* — A.B., 1962 (Hamilton); A.M., 1964 (Rochester); Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- Lynn K. Knauff** (1970), *Adjunct Assistant Professor of Maternal and Child Health* — B.A., 1957 (St. Lawrence University); M.P.H., 1970 (The University of North Carolina at Chapel Hill)
- Gary Grove Koch** (1967), *Professor of Biostatistics* — B.S., 1962, M.S., 1963 (Ohio State); Ph.D., 1968 (The University of North Carolina at Chapel Hill)
- Thomas Robert Konrad** (1978), *Research Assistant Professor of Dental Ecology and Health Services Research, School of Dentistry and Health Policy and Administration, School of Public Health* — B.A., 1966 (Santa Clara); M.A., 1970, Ph.D., 1975 (The University of North Carolina at Chapel Hill)
- Jacob Koomen, Jr.** (1959), *Professor of Health Policy and Administration, Emeritus* (1985) — B.S., 1939, M.D., 1945 (Rochester); M.P.H., 1957 (The University of North Carolina)
- Jonathan Bruce Kotch** (1978), *Associate Professor of Maternal and Child Health* — B.A., 1968 (Columbia College); M.D., 1973 (Stanford University); B.A., 1974 (Cambridge); M.P.H., 1977 (The University of North Carolina at Chapel Hill); M.A., 1978 (Cambridge)
- Milton Kotelchuck** (1988), *Associate Professor and Chair of Maternal and Child Health* — B.A., 1967 (Johns Hopkins University); M.A., 1968, Ph.D., 1972, M.P.H., 1975 (Harvard University)
- Mary G. Kovar** (1988), *Adjunct Professor of Health Policy and Administration* — B.S., 1951, M.S., 1955 (University of Pittsburgh); Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- Roy Raymond Kuebler, Jr.** (1958), *Professor of Biostatistics, Emeritus (1976); Lecturer in Biostatistics* — A.B., 1933 (Dickinson); A.M., 1947 (Pennsylvania); Ph.D., 1958 (The University of North Carolina)

- Edward J. Kuenzler** (1965), *Professor of Environmental Biology in the Department of Environmental Sciences and Engineering* – B.S., 1951 (Florida); M.S., 1953, Ph.D., 1959 (Georgia)
- Lawrence Louis Kupper** (1970), *Professor of Biostatistics* – B.S., 1961 (Maryland); M.S., 1965 (Florida); Ph.D., 1970, (The University of North Carolina at Chapel Hill)
- James C. Lamb IV** (1985), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.A., 1973; Ph.D., 1975 (The University of North Carolina at Chapel Hill)
- James C. Lamb III** (1959), *Professor of Sanitary Engineering Emeritus (1987) in the Department of Environmental Sciences and Engineering* – B.S.C.E., 1947 (Virginia Military Institute); M.S., 1948, S.E., 1952, ScD., 1953 (Massachusetts Institute of Technology)
- Peter R. Lamprey** (1987), *Adjunct Assistant Professor of Maternal and Child Health* – M.B., Ch.B., M.D., 1971 (University of Ghana Medical School); M.P.H., 1975 (University of California at Los Angeles); Diploma, 1980 (Massachusetts Institute of Technology); Dr.P.H., 1980 (Harvard University)
- Suzanne E. Landis** (1986), *Research Assistant Professor of Epidemiology* – B.S., 1974 (Muhlenberg College, Pennsylvania); M.D., 1978 (University of Pennsylvania); M.P.H., 1986 (The University of North Carolina at Chapel Hill)
- John Edgar Larsh, Jr.** (1943), *Professor of Parasitology and Laboratory Practice, Emeritus (1981)* – B.A., 1939, M.S., 1940 (Illinois); Sc.D., 1943 (Johns Hopkins)
- Donald Thomas Lauria** (1965), *Professor of Environmental Engineering in the Department of Environmental Sciences and Engineering, Acting Director, Office of International Public Health Programs* – B.C.E., 1956 (Manhattan); M.S.S.E., 1965 (Syracuse); Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- Therese P. Lawler** (1977), *Adjunct Assistant Professor of Public Health Nursing* – B.S.N., 1957 (Georgetown); M.S., 1972 (East Carolina); M.P.H., 1986 (The University of North Carolina at Chapel Hill); Ed.D., 1982 (North Carolina State University)
- John J. Lee** (1988), *Clinical Associate Professor of Health Policy and Administration* – B.S., 1956 (Merrimack College); M.B.A., 1970 (University of Florida at Gainesville)
- Kerry Lamont Lee** (1975), *Adjunct Associate Professor of Biostatistics* – B.S., 1965 (Utah); M.S., (Stanford); Ph.D., 1975 (The University of North Carolina at Chapel Hill)
- David H. Leith** (1984), *Professor of Environmental Sciences and Engineering* – B.S., 1970, M.S., 1970 (University of Cincinnati); D.S., 1975 (Harvard University)
- Judith T. Lessler** (1981), *Adjunct Associate Professor of Biostatistics* – B.A., 1966 (The University of North Carolina at Chapel Hill); M.A.T., 1967 (Emory University); Ph.D., 1974 (The University of North Carolina at Chapel Hill)
- Richard J. Levine** (1984), *Adjunct Associate Professor of Epidemiology* – A.B., 1960 (Princeton University); M.S., 1964 (California Institute of Technology) M.D., 1971 (St. Louis University); M.P.H., 1976 (Harvard)
- Ronald H. Levine** (1980), *Adjunct Professor of Health Policy and Administration* – B.S., 1955 (Union College); M.D., 1959 (State University of New York); M.P.H., 1967 (The University of North Carolina at Chapel Hill)
- Linda West Little** (1971), *Adjunct Associate Professor of Environmental Biology in the Department of Environmental Sciences and Engineering* – B.A., 1959 (Women's College, North Carolina); M.S.P.H., 1962, Ph.D., 1968 (The University of North Carolina at Chapel Hill)
- Frank Aloysius Loda, Jr.** (1967), *Professor of Pediatrics and Adjunct Professor of Maternal and Child Health* – A.B., 1956 (Harvard); M.D., 1960 (Vanderbilt)
- Robert A. Loddengaard** (1972), *Clinical Associate Professor of Health Policy and Administration Emeritus (1988)* – B.E.E., 1949 (City College of New York); M.S.P.H., 1971 (The University of North Carolina at Chapel Hill)

- Laureen Lopez** (1988), *Assistant Professor of Nutrition* – B.S., 1976 (Douglass College, Rutgers University); M.S., 1979 (Rutgers University); Ph.D., 1984 (Cornell University)
- Gory J. Love** (1973), *Research Associate Professor of Epidemiology* – B.S., 1949 (Georgia); M.P.H., 1959, D.Sc., 1961 (Pittsburgh)
- James W. Luckey** (1980), *Clinical Associate Professor of Health Policy and Administration* – B.A., 1972 (University of Colorado); Ph.D., 1978 (University of Nebraska-Lincoln)
- John C. Lumsden** (1980), *Adjunct Professor of Environmental Sciences and Engineering* – B.S., 1947 (North Carolina State University)
- Anders S. Lunde** (1968), *Adjunct Professor of Biostatistics* – B.A., 1938 (St. Lawrence); M.A., 1947, Ph.D., 1955 (Columbia)
- Frances Lynn** (1985), *Research Assistant Professor of Environmental Sciences and Engineering* – B.A., 1966 (Goucher College); Master of International Affairs, 1969 (Columbia University); Dr.P.H., 1983 (The University of North Carolina at Chapel Hill)
- John Newton MacCormack** (1979), *Adjunct Associate Professor of Epidemiology* – B.A., 1958 (Duke); M.D., 1962, M.P.H., 1968 (The University of North Carolina at Chapel Hill)
- Neil E. Mackenzie** (1983), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – Bc.S., 1976, Ph.D., 1979 (University of Aberdeen)
- John Mackowiak** (1983), *Adjunct Assistant Professor of Health Policy and Administration and Assistant Professor of Pharmacy* – B.S., 1979, M.S., 1980 (University of Illinois); Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Donald Lewis Madison** (1969), *Professor of Social and Administrative Medicine and Family Medicine, School of Medicine and Professor of Health Policy and Administration, School of Public Health* – B.Mus.Ed., 1958 (La Sierra); M.D., 1965 (Loma Linda)
- Katherine Magruder-Habib** (1977), *Adjunct Assistant Professor of Epidemiology* – B.A., 1961 (Duke University); M.P.H., 1975, Ph.D., 1978 (The University of North Carolina at Chapel Hill)
- Barry H. Margolin** (1987), *Professor and Chair of Biostatistics* – B.S., 1963 (City College of New York); M.A., 1964, Ph.D., 1967 (Harvard University)
- Malcolm Alan Martin** (1981), *Adjunct Associate Professor, Parasitology and Laboratory Practice (Field)* – A.A., 1957 (George Washington University); M.D., 1962 (Yale University)
- Ted B. Martonen** (1982), *Adjunct Professor of Environmental Sciences and Engineering* – B.S., 1966 (University of Michigan); M.S., 1971 (Michigan State University); M.S., 1973; Ph.D., 1977 (University of Rochester)
- Jane E. Matthis** (1988), *Adjunct Instructor of Health Behavior and Health Education* – B.S., 1967 (Brigham Young University); M.S.P.H., 1972 (The University of North Carolina at Chapel Hill)
- Imogene McCannless** (1984), *Adjunct Assistant Professor of Biostatistics* – B.A., 1972, M.A., 1973 (The University of North Carolina at Greensboro); Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- Margaret F. McCann** (1985), *Research Assistant Professor of Epidemiology* – A.B., 1970 (Middlebury College); M.S., 1973 (Hunter College); Ph.D., 1984 (The University of North Carolina at Chapel Hill)
- Joseph B. McCormick** (1981), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1964 (Florida Southern College); M.S., 1970 (Harvard University); M.D., 1971 (Duke University)
- David McCoy** (1986), *Clinical Assistant Professor of Health Behavior and Health Education* – B.S., 1976, M.Ed., 1979 (University of Georgia); M.P.H., 1982, J.D., 1985 (The University of North Carolina at Chapel Hill)

- Neil J. McDonald (1983), *Clinical Associate Professor of Health Policy and Administration* – B.S., 1948 (Duke University); M.P.A., 1966 (Baylor University); Dr.P.A., 1971 (George Washington University)
- Timothy McGloin (1987), *Visiting Instructor of Health Behavior and Health Education* – B.S., 1967 (Loyola College); M.S.P.H., 1971 (University of Massachusetts)
- Marie Justin McIntyre (1967), *Associate Professor of Public Health Nursing, Emerita (1980)* – B.S., 1950, M.S., 1952 (Syracuse); M.S., 1962 (Harvard)
- Patrick McKenry (1988), *Visiting Professor in Maternal and Child Health* – A.B., 1971, M.S., 1972, M.S., 1974, Ph.D., 1976 (University of Tennessee)
- Robert W. McKinney (1981), *Adjunct Associate Professor of Parasitology and Laboratory Practice* – B.S., 1947 (Indiana State University); M.S., 1949 (New York University); Ph.D., 1956 (University of Michigan)
- Curtis P. McLaughlin (1968), *Professor of Business Administration and Health Policy and Administration and Coordinator of Operations Management and Quantitative Methods, School of Business Administration* – B.A., 1954 (Wesleyan); M.B.A., 1956, D.B.A., 1966 (Harvard)
- Robert A. McLean (1986), *Associate Professor of Health Policy and Administration* – B.A., 1971; M.A., 1973 (University of Texas at Austin); Ph.D., 1976 (Cornell University)
- Kenneth R. McLeroy (1983), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.S., 1967 (University of Houston); M.S., 1970 (University of Oklahoma); Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- Helen Jo McNeil (1980) *Adjunct Associate Professor of Public Health Nursing* – B.S., 1947 (Seattle University); M.N., 1961 (University of Washington)
- Julie McQueen (1988), *Adjunct Instructor of Health Behavior and Health Education* – B.S., 1977 (The University of North Carolina at Greensboro)
- Melinda S. Meade (1978), *Associate Professor of Geography and Adjunct Associate Professor of Epidemiology* – B.A., 1966 (Hofstra); M.A., 1970 (Michigan State); Ph.D., 1974 (Hawaii)
- Marie Meglen (1987), *Adjunct Assistant Professor of Maternal and Child Health* – B.S., 1963 (College of Saint Scholastica); M.S.C., 1968 (Columbia University)
- Stephen C. Merritt (1983), *Assistant Professor of Parasitology and Laboratory Practice* – B.S., 1976 (Abilene Christian University); Ph.D., 1980 (Texas A&M University)
- Nancy Milio (1976), *Professor of Nursing, School of Nursing and Professor of Health Policy and Administration, School of Public Health* – B.S., 1960, M.A., 1965 (Wayne State); Ph.D., 1970 (Yale)
- C. Arden Miller (1966), *Professor of Maternal and Child Health, School of Public Health and Professor of Pediatrics, School of Medicine* – M.D., 1948 (Yale)
- Cass T. Miller (1985), *Assistant Professor of Environmental Sciences and Engineering* – B.S., 1977; M.S. (University of Toledo, OH); M.S., 1981; Ph.D., 1984 (University of Michigan)
- David S. Millington (1981), *Adjunct Associate Professor of Environmental Sciences and Engineering* – B.Sc., 1966, Ph.D., 1969 (University of Liverpool, England)
- Forest O. Mixon (1972), *Adjunct Professor of Environmental Engineering in the Department of Environmental Sciences and Engineering* – B.S., 1952, M.S., 1954 (North Carolina State University); Ph.D., 1958 (Delaware)
- Beatrice Bell Mongeau (1962), *Associate Professor of Public Health Nursing, Emerita (1978)* – B.S., 1955, M.P.H., 1956 (The University of North Carolina); Ph.D., 1973 (The University of North Carolina at Chapel Hill)
- Max D. Moody (1966), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – A.B., 1948, M.A., 1949, Ph.D., 1953 (Kansas)

- Robert Burns Moorhead** (1967), *Lecturer in Health Policy and Administration and Associate Dean for Computing and Information Services* — B.A., 1954, (The University of North Carolina); M.P.A., 1972 (The University of North Carolina at Chapel Hill)
- David Humphreys Moreau** (1968), *Professor of City and Regional Planning and of Environmental Sciences and Engineering and Associate Dean of Arts and Sciences* — B.S., 1960 (Mississippi State); M.S., 1963 (The University of North Carolina at Chapel Hill); Ph.D., 1967 (Harvard)
- Lucy Shields Morgan** (1942), *Professor of Health Education, Emerita (1966)* — A.B., 1922 (Tennessee); M.A., 1929 (Columbia); M.S., 1932 (Tennessee); Ph.D., 1938 (Yale)
- Timothy M. Morgan** (1987), *Adjunct Associate Professor of Biostatistics* — B.A., 1979, M.S., 1980, Ph.D., 1983 (University of California at Los Angeles)
- Dexter Morris** (1987), *Assistant Professor of Epidemiology* — B.A., 1974 (University of Indiana); Ph.D., 1980 (University of Texas); M.D., 1984 (Baylor College of Medicine)
- Joseph Morrissey** (1987), *Adjunct Associate Professor of Health Policy and Administration and Associate Professor of Social Medicine* — B.S., 1963 (Holy Cross College); M.A., 1966 (Clark University); Ph.D., 1975 (The University of North Carolina at Chapel Hill)
- Sarah Taylor Morrow** (1968), *Adjunct Professor of Maternal and Child Health* — B.S., 1942 (The University of North Carolina); M.D., 1944 (Maryland); M.P.H., 1960 (The University of North Carolina)
- Claude W. Moss** (1972), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.S., 1957, M.S., 1962, Ph.D., 1965 (North Carolina State at Raleigh)
- Lawrence H. Muhlbaier** (1985), *Adjunct Assistant Professor of Biostatistics* — A.B., 1971 (Duke University); M.S., 1977; Ph.D., 1981 (University of North Carolina at Chapel Hill)
- Keith Eldon Muller** (1978), *Associate Professor in Biostatistics* — B.S., 1970, M.A., 1971 (Bradley University); Ph.D., 1976, M.S., 1981 (The University of North Carolina at Chapel Hill)
- Eric B. Munson** (1980), *Adjunct Professor of Social and Administrative Medicine and Adjunct Professor of Health Policy and Administration* — B.A., 1965 (Wabash College); M.B.A., 1967 (University of Chicago)
- Elizabeth Mutran** (1987), *Associate Professor of Health Behavior and Health Education* — B.A., 1971 (Saint Francis College); M.A., 1973, Ph.D., 1977 (Indiana University)
- Lawrence E. Myers** (1977), *Adjunct Assistant Professor of Biostatistics* — B.A., 1969 (Carlton); Ph.D., 1972 (University of California, Berkeley)
- William C. Nelson** (1969), *Adjunct Associate Professor of Biostatistics* — B.S., 1961 (Wake Forest); M.S., 1964, Ph.D., 1967 (Virginia Polytechnic Institute)
- Daniel L. Norwood** (1986), *Adjunct Assistant Professor of Environmental Sciences and Engineering* — B.S., 1977 (Virginia Polytechnic Institute and State University); M.S.P.H., 1981; Ph.D., 1985 (The University of North Carolina at Chapel Hill)
- Richard R. Nugent** (1979), *Adjunct Associate Professor of Maternal and Child Health* — B.A., 1962 (Amherst); M.D., 1966 (Pennsylvania); M.P.H., 1974 (The University of North Carolina at Chapel Hill)
- Charles H. Okey** (1976), *Clinical Associate Professor of Parasitology and Laboratory Practice, Emeritus (1982)* — A.B., 1936 (Arkansas State); M.S., 1943 (Tennessee); Ph.D., 1950 (Yale)
- Daniel Alexander Okun** (1952), *Kenan Professor of Environmental Engineering, Emeritus (1982) in the Department of Environmental Sciences and Engineering* — B.S.C.E., 1937 (Cooper Union); M.S.C.E., 1938 (California Institute of Technology); Sc.D., 1948 (Harvard)
- Athos Ottolenghi** (1979), *Adjunct Professor of Parasitology and Laboratory Practice (Field)* — M.D., 1946 (Pavia Medical School, Italy)

- Hans W. Paerl** (1978), *Research Associate Professor of Environmental Chemistry and Biology, School of Public Health and Associate Professor, Institute of Marine Sciences* — A.A., 1967 (College of San Mateo, California); B.Sc., 1969; Ph.D., 1973 (California)
- Erskine L. Palmer** (1973), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.S., 1962, M.S., 1964 (Florida State); Ph.D., 1970 (Mississippi)
- Barnett R. Parker** (1977), *Associate Professor of Health Policy and Administration* — B.S., 1966, M.S., 1972, Ph.D., 1976 (Rochester)
- George R. Parkerson, Jr.** (1977), *Adjunct Associate Professor of Epidemiology* — B.S., 1953, M.D., 1953 (Duke); M.P.H., 1977 (The University of North Carolina at Chapel Hill)
- Rebecca Parkinson** (1983), *Adjunct Assistant Professor of Health Behavior and Health Education* — B.A., 1971 (Drew University); M.S.P.H., 1973 (The University of North Carolina at Chapel Hill)
- John E. Paul** (1984), *Adjunct Assistant Professor of Health Policy and Administration* — B.A., 1969 (Cornell University); M.Ed., 1975 (University of North Carolina at Charlotte); M.S.P.H., 1980, Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- Ali A. Paydarfar** (1982), *Adjunct Professor of Nutrition* — B.A., 1950, B.L.L., 1954 (Tehran University, Iran); M.A., 1960, Ph.D., 1962 (University of Kentucky, Lexington)
- Clarence E. Pearson** (1987), *Adjunct Professor of Health Behavior and Health Education* — B.S., 1950 (Northern Illinois University); M.P.H., 1952 (The University of North Carolina at Chapel Hill)
- Terry William Pearson** (1982), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.Sc., 1967, Ph.D., 1973 (University of British Columbia, Vancouver)
- Mary D. Peoples-Sheps** (1981), *Associate Professor of Public Health Nursing and Maternal and Child Health* — B.S.N., 1969 (St. John's College); M.S., 1973 (Boston University); Dr.P.H., 1981 (The University of North Carolina at Chapel Hill)
- Miriam Peterson** (1987), *Adjunct Assistant Professor of Nutrition* — B.S., 1964 (Carnegie-Mellon University); R.D., 1965 (Yale-New Haven Medical Center); M.P.H., 1967 (University of Michigan)
- Frederic K. Pfaender** (1971), *Professor Environmental Microbiology in the Department of Environmental Sciences and Engineering* — B.S., 1966, M.S., 1968 (California State); Ph.D., 1971 (Cornell)
- G. Briggs Phillips** (1978), *Adjunct Professor of Parasitology and Laboratory Practice* — B.S., 1954 (Maryland); Ph.D., 1965 (New York)
- Harry T. Phillips** (1969), *Professor of Health Policy and Administration, School of Public Health and Professor of Social and Administrative Medicine, School of Medicine, Emeritus* (1983) — M.B., 1938, Ch.B., 1938, D.P.H., 1953, M.D., 1956 (Cape Town, S. Africa)
- Leo Pine** (1965), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.S., 1943 (Arizona); M.S., 1948 (Wisconsin); Ph.D., 1952 (California)
- Warren T. Piver** (1977), *Adjunct Associate Professor of Environmental Sciences in the Department of Environmental Sciences and Engineering* — B.S., 1963 (Duke); B.S.Ch.E., 1965, M.S.Ch.E., 1970, Ph.D., 1972 (North Carolina State University at Raleigh)
- Margaret B. Pollard** (1975), *Clinical Assistant Professor in Health Behavior and Health Education* — B.S., 1954, M.S., 1958 (North Carolina Central)
- Barry M. Popkin** (1977), *Professor of Nutrition* — B.S., 1967, M.S., 1969 (University of Wisconsin); Ph.D., 1974 (Cornell University)
- Miquel S. Porta** (1985), *Adjunct Assistant Professor of Epidemiology* — B.S., 1974 (Institut EP Joanot Martorell (UAB); M.D., 1981 (Universitat Autònoma de Barcelona); M.P.H., 1984 (The University of North Carolina at Chapel Hill)

- Christopher J. Portier** (1986), *Adjunct Assistant Professor of Biostatistics* – B.S., 1977 (Nicholls State University); M.S., 1979; Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- James V. Porto, Jr.** (1988), *Clinical Assistant Professor of Health Policy and Administration* – B.A., 1968 (Duke University); M.S., 1976 (North Carolina State University at Raleigh)
- Dana Edward Anthony Quade** (1962), *Professor of Biostatistics* – B.A., 1955 (UCLA); Ph.D., 1960 (The University of North Carolina at Chapel Hill)
- Madhav B. Ranade** (1981), *Adjunct Associate Professor of Environmental Sciences and Engineering* – B. Tech., 1964 (Nagpur University, India); M.S., 1968, Ph.D., 1974 (Illinois Institute of Technology)
- Susan Randolph** (1987), *Adjunct Instructor of Public Health Nursing* – B.S.N., 1975 (Ohio State University); M.S.N., 1979 (Indiana University)
- John A. Reidy** (1984), *Adjunct Assistant Professor of Parasitology and Laboratory Practice* – B.A., 1972 (Rutgers College); Ph.D., 1978 (Medical College of Virginia)
- Charles B. Reimer** (1979), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1949, M.S., 1949 (Massachusetts Institute of Technology); Ph.D., 1957 (Johns Hopkins)
- Donald W. Reinfurt** (1978), *Adjunct Associate Professor in Biostatistics, Associate Director for Analysis Studies, Highway Safety Research Center* – B.S., 1960 (State University of New York at Albany); M.A., 1963 (State University of New York at Buffalo); Ph.D., 1970 (North Carolina State University at Raleigh)
- Errol Reiss** (1978), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – Ph.D., 1972 (Rutgers), B.Sc., 1973 (City College of New York)
- Parker Cramer Reist** (1972), *Professor of Air and Industrial Hygiene Engineering in the Department of Environmental Sciences and Engineering* – B.S., 1955 (Pennsylvania State); S.M., 1957 (Massachusetts Institute of Technology); S.M., 1963, Sc.D., 1966 (Harvard)
- Barbara Renner** (1985), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.S., 1977, M.Ed., 1979, Ph.D., 1981 (University of Virginia)
- Jimmie L. Rhyne** (1951), *Lecturer in Maternal and Child Health* – B.A., 1944 (The University of North Carolina); M.D., 1948 (University of Maryland, School of Medicine); M.P.H., 1958 (The University of North Carolina at Chapel Hill)
- Thomas C. Ricketts** (1989), *Clinical Assistant Professor of Health Policy and Administration* – A.B., 1970, M.P.H., 1978, Ph.D., 1986 (The University of North Carolina at Chapel Hill)
- Thomas Rice** (1983), *Assistant Professor of Health Policy and Administration* – B.A., 1976 (The University of North Carolina at Chapel Hill); M.A., 1979, Ph.D., 1982 (University of California – Berkeley)
- Wilson B. Riggan** (1969), *Adjunct Associate Professor of Biostatistics* – B.S., 1950 (Virginia Polytechnic Institute); Ph.D., 1966 (North Carolina State University at Raleigh)
- Michael A. Riggs** (1987), *Adjunct Assistant Professor of Parasitology* – B.A., 1976 (University of New Hampshire); M.S., 1979 (Iowa State University); M.P.H., 1985 (The University of North Carolina at Chapel Hill); Ph.D., 1986 (Wake Forest University)
- Christopher Ringwalt** (1988), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.A., 1970 (Haverford College); M.S.S.W., 1975 (Utah School of Social Work); Dr.P.H., 1985 (The University of North Carolina at Chapel Hill)
- Emily James Rivenbark** (1979), *Adjunct Instructor of Public Health Nursing and Nursing* – B.S.N., 1973 (East Carolina University)
- Doris Emma Roberts** (1975), *Adjunct Professor of Public Health Nursing* – Dip. in Nursing, 1938 (Peter Bent Brigham School of Nursing); B.S., 1944 (Geneva College); M.P.H., 1958 (Minnesota); Ph.D., 1967 (The University of North Carolina at Chapel Hill)

- Walter J. Rogan** (1977), *Adjunct Associate Professor of Epidemiology* – B.A., 1971 (LaSalle); M.P.H., 1975, M.D., 1975 (California)
- Bonnie Rogers** (1984), *Assistant Professor of Public Health Nursing and Clinical Assistant Professor, School of Nursing* – Diploma, 1966 (Washington Hospital Center); B.S., 1976 (George Mason University, Virginia); M.P.H., 1977; Dr.P.H., 1984 (The Johns Hopkins University)
- Margie E. Rose** (1984), *Adjunct Assistant Professor of Maternal and Child Health* – A.B., 1961 (Duke University); M.S.P.H., 1968 (The University of North Carolina at Chapel Hill)
- Michael Rosenberg** (1985), *Adjunct Associate Professor of Epidemiology* – B.A., 1970 (University of California, Berkeley); M.P.H., 1978 (Harvard University); M.D., 1985 (University of California, Davis)
- Leonard S. Rosenfeld** (1972), *Professor of Health Policy and Administration, Emeritus* (1982) – B.S., 1933, M.D., 1937 (New York University); M.P.H., 1942 (Johns Hopkins)
- Richard Gary Rozier** (1976), *Associate Professor of Health Policy and Administration* – A.B., 1966 (Wake Forest); D.D.S., 1970, M.P.H., 1976 (The University of North Carolina at Chapel Hill)
- Cordella Rumpf** (1986), *Adjunct Assistant Professor of Nutrition* – B.S., 1948, M.S., 1954 (Tuskegee Institute)
- Carol W. Runyan** (1984), *Research Assistant Professor of Health Behavior and Health Education* – B.A., 1972 (Macalester College); M.P.H., 1975 (University of Minnesota); Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Desmund K. Runyan** (1981), *Associate Professor of Social and Administrative Medicine, Associate Professor of Pediatrics, and Clinical Associate Professor of Epidemiology* – A.B., 1972 (Macalester College); M.P.H., 1975, M.D., 1976 (University of Minnesota)
- Ibrahim A. Salama** (1983), *Adjunct Professor of Biostatistics* – B.Sc., 1965 (Alexandria University, Egypt); M.Sc., 1971, Ph.D., 1974 (The University of North Carolina at Chapel Hill)
- Marla E. Salmon** (1986), *Associate Professor and Chair, Curriculum in Public Health Nursing* – B.A., 1971; B.S., 1972 (University of Portland, Oregon); Sc.D., 1977 (The Johns Hopkins University)
- Basil Samara** (1988), *Adjunct Assistant Professor of Biostatistics* – B.A., 1971 (Kalamazoo College); M.S., 1979 (Miami University); Ph.D., 1985 (University of Florida at Gainesville)
- Dale Sandler** (1984), *Adjunct Assistant Professor of Epidemiology* – B.A. 1972 (Boston University); M.P.H., 1975 (Yale University); Ph.D., 1979 (Johns Hopkins University)
- Robert S. Sandler** (1981), *Clinical Associate Professor of Epidemiology, School of Public Health and Associate Professor of Medicine, School of Medicine* – B.S., 1971 (Union College); M.D., 1975 (Yale University); M.P.H., 1982, (The University of North Carolina at Chapel Hill)
- Eric Brandon Sansone** (1981), *Adjunct Associate Professor, Parasitology and Laboratory Practice* – B.Ch.E., 1960 (City College of New York); M.P.H., 1962, Ph.D., 1967 (University of Michigan)
- David A. Savitz** (1985), *Associate Professor of Epidemiology* – B.S., 1975 (Brandeis University, Waltham, MA); M.S., 1978 (Ohio State University); Ph.D., 1982 (University of Pittsburgh)
- Earl S. Schaefer** (1971), *Professor of Maternal and Child Health* – B.S., 1948 (Purdue University); M.A., 1951, Ph.D., 1954 (Catholic University of America)
- Morris Schaefer** (1967), *Professor of Health Policy and Administration Emeritus* (1987) and *Clinical Professor, Department of Psychiatry* – B.S., 1943 (New Jersey State); M.A., 1951 (New School for Social Research); D.P.A., 1962 (Syracuse)

- Victor J. Schoenbach** (1980), *Associate Professor of Epidemiology* – B.S., 1968 (Columbia University); M.Sc., 1969 (University of London); M.S.P.H., 1975, Ph.D., 1979 (The University of North Carolina at Chapel Hill)
- Ernest Schoenfeld** (1972), *Associate Dean for Administration and Clinical Assistant Professor of Parasitology and Laboratory Practice* – A.A.S., 1956 (State University Agricultural and Technical Institute); B.S., 1964 (Cornell University); M.P.H., 1977, Dr.P.H., 1981 (The University of North Carolina at Chapel Hill)
- John Schoenfelder** (1982), *Adjunct Assistant Professor of Biostatistics* – B.A., 1972 (Cornell College); M.S., 1974, Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- Robert C. Schreiner** (1983), *Clinical Instructor of Health Policy and Administration and Director, Division of Computing and Information Services, School of Public Health* – A.B., 1969 (University of Chicago); M.S., 1975 (The University of North Carolina at Chapel Hill)
- John Richard Seed** (1981), *Professor and Chair, Parasitology and Laboratory Practice, School of Public Health* – A.B., 1959 (Lafayette College); Ph.D., 1963 (Yale University)
- Maija L. Selby** (1986), *Associate Professor and Deputy Chair for Research Development, Curriculum in Public Health Nursing* – B.S.N., 1973 (Cornell University); P.N.P., 1975 (University of Texas, San Antonio); M.P.H., 1980; Dr.P.H., 1982 (University of Texas, Houston)
- Pranab Kumar Sen** (1965), *Cary C. Boshamer Professor of Biostatistics and Adjunct Professor of Statistics* – B.S., 1955, M.S., 1957, Ph.D., 1962 (Calcutta University, India)
- Miriam Bachar Settle** (1980), *Clinical Assistant Professor of Health Behavior and Health Education* – B.A., 1954 (Hunter College); M.S., Hyg., 1963 (University of Pittsburgh)
- Richard H. Shachtman** (1968), *Professor Biostatistics, Operations Research and Systems Analysis* – B.A., 1963 (North Carolina State University at Raleigh); M.A., 1967, Ph.D., 1968 (Maryland)
- Babubhai V. Shah** (1971), *Adjunct Professor of Biostatistics* – B.Sc., 1955, M.Sc., 1957, Ph.D., 1960 (Bombay)
- Cecil George Sheps** (1968), *Taylor Grandy Distinguished Professor of Social Medicine, Department of Social and Administrative Medicine and Professor of Epidemiology, Emeritus* (1986) – M.D., 1936 (Manitoba); M.P.H., 1947 (Yale); D.Sc., (Hon.), 1970 (Chicago Medical School); Ph.D., 1983 (Ben Gurion University)
- Morris A. Shiffman** (1964), *Professor of Environmental Health in the Department of Environmental Sciences and Engineering* – D.V.M., 1944 (Middlesex); M.P.H., 1945 (Michigan); Docteur-Veterinaire, 1949 (National Veterinary College, France); M.G.A. 1957, Ph.D., 1967 (Pennsylvania)
- Mark S. Shuman** (1970), *Professor of Environmental Chemistry in the Department of Environmental Sciences and Engineering* – B.S., 1959 (Washington State); Ph.D., 1966 (Wisconsin)
- Carl M. Shy** (1974), *Professor of Epidemiology, Professor of Environmental Sciences and Engineering, Clinical Professor of Family Medicine and Director of Occupational Health Studies Program* – A.B., 1956 (St. Louis); M.D., 1962 (Marquette); M.P.H., 1965, Dr.P.H., 1967 (Michigan)
- Earl Siegel** (1964), *Professor of Maternal and Child Health, School of Public Health and Clinical Professor of Pediatrics, School of Medicine* – B.S., 1944 (University of Pittsburgh); M.D., 1948 (New York Medical College); M.P.H., 1961 (University of California)
- Steven L. Simon** (1986), *Assistant Professor of Environmental Sciences and Engineering* – B.S., 1973; B.S., 1975 (University of Texas at Austin); M.S., 1977 (University of Texas Health Science Center, Dallas); Ph.D., 1985 (Colorado State University)

- Kit Nordbo Simpson** (1985), *Lecturer of Health Policy and Administration* – N.A. (Pittman School of Business (London University)); Diploma, 1968 (Hospitals-laborantskolen, University of Copenhagen); M.P.H., 1983 (The University of North Carolina at Chapel Hill)
- Philip C. Singer** (1973), *Professor of Environmental Sciences and Engineering* – B.C.E., 1963 (The Cooper Union); M.S., 1965 (Northwestern); S.M. 1965, Ph.D., 1969 (Harvard)
- William Thomas Small, Jr.** (1971), *Assistant Dean for Student Affairs* – B.S., 1965 (North Carolina Central University); M.S.P.H., 1969 (The University of North Carolina at Chapel Hill)
- C. Gregory Smith** (1983), *Adjunct Assistant Professor of Epidemiology* – A.B., 1972, M.D., 1977, M.P.H., 1982 (The University of North Carolina at Chapel Hill)
- Marjolein V. Smith** (1985), *Assistant Professor of Biostatistics* – B.S., 1974 (North Carolina State University, Raleigh); M.S., 1975 (University of Kentucky); M.S., 1977; Ph.D. (North Carolina State University at Raleigh)
- Peter Byrd Smith** (1978), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1949 (Richmond); M.S., 1951 (Tennessee); Ph.D., 1959 (Wisconsin)
- Mark D. Sobsey** (1974), *Professor of Environmental Sciences and Engineering, School of Public Health, and Bacteriology and Immunology, School of Medicine* – B.S., 1965, M.S., 1967 (Pittsburgh); Ph.D., 1971 (California, Berkeley)
- William A. Sollecito** (1983), *Adjunct Assistant Professor of Health Policy and Administration* – B.B.A., 1969 (Baruch College); M.S., 1970 (University of Pittsburgh); Dr.P.H., 1982 (The University of North Carolina at Chapel Hill)
- James R. Sorenson** (1985), *Professor and Chair of the Department of Health Behavior and Health Education* – B.A., 1965, M.A., 1966 (University of Washington, Seattle); Ph.D., 1970 (Cornell University)
- Francis W. Spierto** (1980), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.A., 1964 (St. Vincent College); Ph.D., 1969 (Purdue University)
- Catherine Staes** (1989), *Adjunct Instructor in Public Health Nursing* – B.S.N., 1981 (Georgetown University); M.P.H., 1987 (Johns Hopkins University)
- John W. Stamm** (1984), *Professor of Dental Ecology and Assistant Dean and Director of Dental Research, and Adjunct Professor of Epidemiology* – D.D.S., 1967 (University of Alberta, Canada); D.D.P.H., 1969, M.Sc.D., 1971 (University of Toronto)
- Lola V. Stamm** (1982), *Assistant Professor of Parasitology and Laboratory Practice* – B.S., 1974 (Salem College, Salem, WV); M.S., 1977, Ph.D., 1979 (West Virginia University)
- William Standish** (1982), *Adjunct Assistant Professor of Biostatistics* – B.S., 1973 (University of Denver, Co.); M.S., Ph.D., 1978 (The University of North Carolina at Chapel Hill)
- Thomas B. Starr** (1983), *Adjunct Assistant Professor of Biostatistics* – B.A., 1966 (Hamilton College); M.S., 1968, Ph.D., 1971 (University of Wisconsin – Madison)
- Allan B. Steckler** (1975), *Associate Professor of Health Behavior and Health Education* – B.S., 1964, M.P.H., 1965, Dr.P.H., 1971 (UCLA)
- Arthur C. Stern** (1968), *Professor of Air Hygiene in the Department of Environmental Sciences and Engineering, Emeritus (1978)* – M.E., 1930, M.S., 1933 (Stevens Institute of Technology); Dr. of Engineering, Honoris Causa, 1975 (Stevens Institute of Technology)
- Guy W. Steuart** (1969), *Professor of Health Behavior and Health Education* – M.A., 1944, M.Ed., 1950 (South Africa); M.P.H., 1953 (Yale); Ph.D., 1960 (Natal)
- Rachel Stevens** (1987), *Clinical Assistant Professor of Public Health Nursing* – B.S.N., 1957, M.S.N., 1960 (The University of North Carolina at Chapel Hill); Ed.D., 1983 (North Carolina State University)
- Paul Stewart** (1982), *Research Assistant Professor of Biostatistics* – B.S., 1975 (Furman University); M.S., 1977, Ph.D., 1981 (The University of North Carolina at Chapel Hill)

- E. Barbara Stocking** (1983), *Associate Professor of Maternal and Child Health and Public Health Nursing, Emerita (1981)* — Dip. in Nursing, 1937 (Capital City School School of Nursing); B.S., 1952 (Wayne State University); M.P.H., 1957 (Harvard University)
- Woodhall Stopford** (1982), *Adjunct Assistant Professor of Environmental Sciences and Engineering* — B.A., 1965 (Dartmouth College); B.M.S., 1967 (Dartmouth Medical School); M.D., 1968 (Harvard University); M.S.P.H., 1980 (The University of North Carolina at Chapel Hill)
- Victor J. Strecher** (1984), *Assistant Professor of Health Behavior and Health Education* — B.S., 1977 (Michigan State University); M.P.H., 1980, Ph.D., 1983 (University of Michigan)
- David S. Strogatz** (1985), *Research Assistant Professor of Epidemiology* — B.A., 1975 (Amherst College); M.S.P.H., 1979; Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Chirayath M. Suchindran** (1972), *Professor of Biostatistics* — B.Sc., 1960, M.Sc., 1962 (Kerala); M.S.P.H., 1968, Ph.D., 1972 (The University of North Carolina at Chapel Hill)
- Jeremiah Michael Sullivan** (1978), *Adjunct Associate Professor of Biostatistics* — B.S., 1961, M.A., 1967, Ph.D., 1970 (Princeton)
- Alexander J. Sulzer** (1978), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.A., 1965 (Hardin-Simon); M.Sc., 1960, Ph.D., 1962 (Emory)
- David C. Swan** (1985), *Adjunct Associate Professor of Parasitology and Laboratory Practice* — B.Sc., 1963; M.Sc., 1966 (Queen's University, Belfast, Northern Ireland); Ph.D., 1971 (Max Planck Institute, West Germany)
- Michael R. Swift** (1972), *Professor of Medicine and Clinical Professor of Epidemiology* — B.A., 1955 (Swarthmore); M.A., 1957 (California, Berkeley); D.M., 1962 (New York University)
- Boyd R. Switzer** (1972), *Associate Professor, Department of Nutrition and Adjunct Associate Professor of Biochemistry & Nutrition* — B.A., 1965 (Bridgewater); Ph.D., 1971 (The University of North Carolina at Chapel Hill)
- Michael Joseph Symons** (1969), *Professor of Biostatistics* — B.A., 1965 (Bowling Green); M.P.H., 1967, Ph.D., 1969 (University of Michigan)
- Dorothy McComb Talbot** (1974), *Professor of Public Health Nursing, Emerita (1984)* — Dip. in Nursing, 1940 (Jefferson Hospital, Philadelphia); B.S.N., 1945 (Texas State College for Women); M.A., 1958 (Columbia); M.P.H., 1964, Ph.D., 1970 (Tulane)
- Rosalind Thomas** (1979), *Clinical Assistant Professor in Health Behavior and Health Education* — B.A., 1974 (College of William & Mary); M.P.H., 1975 (The University of North Carolina at Chapel Hill)
- Clyde Thornsberry** (1972), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* — B.S., 1957, Ph.D., 1966 (Kentucky)
- Nancy L. Tigar** (1978), *Lecturer in Public Health Nursing* — Dip. in Nursing, 1955 (Methodist Hospital, Philadelphia); B.S.N., 1962 (University of Pennsylvania); M.P.H., 1971 (University of Michigan)
- Hugh H. Tilson** (1979), *Adjunct Professor in Health Policy and Administration, Adjunct Professor of Epidemiology and Adjunct Professor in the School of Pharmacy and Adjunct Professor of Social and Administration Medicine and Clinical Professor of Family Medicine* — M.D., 1964 (Washington University); M.P.H., 1969, Dr.P.H., 1972 (Harvard)
- James Toole** (1985), *Adjunct Professor of Epidemiology* — B.A., 1947 (Princeton University); M.D., 1949 (Cornell University Medical College); L.L.B., 1963 (LaSalle Extension University)
- Elizabeth M. Tournquist** (1974), *Lecturer of Public Health Nursing* — B.A., 1954 (Duke University); M.A., 1956 (University of Chicago)

- Kinh N. Truong** (1985), *Assistant Professor of Biostatistics* – B.S., 1978 (University of Washington, Seattle); M.A., 1980; Ph.D. (University of California, Berkeley)
- Amy Tsui** (1985), *Research Associate Professor of Maternal and Child Health* – B.A., 1970, M.A., 1972 (University of Hawaii); Ph.D., 1977 (University of Chicago)
- Jerry J. Tulis** (1976), *Clinical Professor of Environmental Sciences and Engineering* – B.S., 1953 (Illinois); M.S., 1955 (Loyola); Ph.D., 1965 (Catholic University of America)
- Craig David Turnbull** (1971), *Associate Professor of Biostatistics* – B.A., 1962 (Albright); M.P.H., 1965, Ph.D., 1971 (The University of North Carolina at Chapel Hill)
- Alvis G. Turner, Jr.** (1969), *Professor of Environmental Sciences in the Department of Environmental Sciences and Engineering* – B.A., 1952, M.S.P.H., 1958 (The University of North Carolina); Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- Emily T. Tyler** (1988), *Adjunct Instructor of Health Behavior and Health Education* – B.A., 1963 (Mary Baldwin College); M.P.H., 1967 (The University of North Carolina at Chapel Hill)
- Eunice Nickerson Tyler** (1945), *Professor of Health Education, Emerita (1966)*, Ph.B., 1931 (Brown); C.P.H., 1933, M.P.H., 1936, Ph.D., 1946 (Yale)
- Herman Alfred Tyroler** (1960), *Alumni Distinguished Professor of Epidemiology* – A.B., 1943 (Ohio); M.D., 1947 (New York)
- J. Richard Udry** (1965), *Professor of Maternal and Child Health, Professor of Sociology, and Director of the Carolina Population Center* – B.S., 1950 (Northwestern University); M.A., 1956 (Long Beach State College); Ph.D., 1960 (University of Southern California)
- Jane K. Vella** (1984), *Adjunct Assistant Professor of Health Behavior and Health Education* – B.Ed., 1955, (Rogers College); M.A., 1966 (Fordham University); Ed.D., 1979 (University of Massachusetts at Amherst)
- James E. Veney** (1970), *Professor of Health Policy and Administration* – B.A., 1961 (Ohio); M.S., 1963, Ph.D., 1966 (Purdue)
- Marilyn F. Vine** (1988), *Research Assistant Professor of Epidemiology* – A.B., 1978 (Brown University); M.P.H., 1983 (Yale University); Ph.D., 1988 (The University of North Carolina at Chapel Hill)
- Thomas J. Vitaglione** (1984), *Adjunct Assistant Professor of Maternal and Child Health* – B.A., 1963 (Hofstra University); M. Phil., 1969 (Columbia University)
- I. Kay Wachsmuth** (1978), *Adjunct Associate Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1966 (Stetson); Ph.D., 1975 (Tennessee)
- Edward Harris Wagner** (1971), *Clinical Professor of Epidemiology* – B.A., 1961 (Princeton); M.D., 1965 (State University of New York); M.P.H., 1972 (The University of North Carolina at Chapel Hill)
- Patricia F. Waller** (1970), *Research Professor of Health Policy and Administration* – A.B., 1953, M.S., 1955 (Miami); Ph.D. (The University of North Carolina)
- Clara Walters** (1972), *Clinical Assistant Professor of Public Health Nursing Emerita (1988)* – B.S., 1961 (Goshen College); M.S., 1971 (The University of North Carolina at Chapel Hill)
- David B. Washburn** (1980), *Adjunct Assistant Professor of Environmental Sciences and Engineering* – A.A., 1964 (Gardner-Webb Junior College); B.S., 1967, Ph.D., 1975 (North Carolina State University at Raleigh)
- Elizabeth L. Watkins** (1977), *Professor of Maternal and Child Health* – A.B., 1944 (Bryn Mawr); M.S.S.A., 1950 (Case Western Reserve); M.Sc.H., 1958, D.Sc., in H., 1966 (Harvard)
- Julia Day Watkins** (1964), *Associate Professor of Public Health Nursing and Nursing, Emerita (1981)* – A.B., 1939 (Bryn Mawr); R.N., 1944 (Virginia); M.P.H., 1957 (The University of North Carolina)

- James E. Watson, Jr.** (1974), *Professor of Radiological Hygiene in the Department of Environmental Sciences and Engineering* – B.S., 1960, M.S., 1962 (North Carolina State University at Raleigh); Ph.D., 1970 (The University of North Carolina at Chapel Hill)
- Norman Fred Weatherly** (1963), *Professor of Parasitology and Laboratory Practice* – B.S., 1953, M.S., 1960 (Oregon State); Ph.D., 1962 (Kansas State)
- David Weber** (1985), *Assistant Professor of Epidemiology* – B.A., 1973 (Wesleyan University); M.D., 1977 (University of California, San Diego); M.P.H., 1985 (Harvard University)
- Kristen A. Weigle** (1987), *Assistant Professor of Epidemiology* – B.S., 1973, M.D., 1976 (University of Pittsburgh)
- Jane A. Weintraub** (1988), *Assistant Professor of Dental Ecology and Health Policy and Administration* – B.S., 1975 (University of Rochester); D.D.S., 1979 (State University of New York); M.P.H., 1980 (Harvard University)
- Charles Manuel Weiss** (1956), *Professor of Environmental Biology in the Department of Environmental Sciences and Engineering* – B.S., 1939 (Rutgers); Ph.D., 1950 (Johns Hopkins)
- William G. Weissert** (1983), *Professor of Health Policy and Administration* – B.S., 1967 (Portland State University); M.S., 1968 (Northwestern University); Ph.D., 1972 (Claremont Graduate School)
- Henry Bradley Wells** (1958), *Professor of Biostatistics, Emeritus (1980)* – B.A., 1950 (Emory); M.S.P.H., 1953, Ph.D., (The University of North Carolina)
- Alice D. White** (1988), *Research Assistant Professor of Epidemiology* – B.A., 1979, M.S.P.H., 1983, Ph.D., 1987 (The University of North Carolina at Chapel Hill)
- Dale Whittington** (1981), *Adjunct Associate Professor of Environmental Sciences and Engineering* – A.B., 1972 (Brown University); M.P.A., 1976 (LBJ School of Public Affairs); M.Sc., 1978 (London School of Economics and Political Science); Ph.D., 1980 (University of Texas at Austin)
- Timothy Wilcosky** (1985), *Research Assistant Professor of Epidemiology* – B.S., 1974 (Duke University); M.S., 1976 (Ohio State University); Ph.D., 1981 (The University of North Carolina at Chapel Hill)
- Allen J. Wilcox** (1979), *Adjunct Professor of Epidemiology* – B.A., 1968, M.D., 1973 (University of Michigan); M.P.H., 1976, Ph.D., 1979 (The University of North Carolina at Chapel Hill)
- Hazel W. Wilkinson** (1972), *Adjunct Assistant Professor of Parasitology and Laboratory Practice (Field)* – B.S., 1963, M.S., 1965, Ph.D., 1972 (Georgia)
- William E. Wilkinson** (1977), *Adjunct Associate Professor of Biostatistics* – B.S., 1959 (Davidson); Ph.D., 1968 (The University of North Carolina at Chapel Hill)
- Donald G. Willhoit** (1964), *Associate Professor of Environmental Sciences and Engineering* – B.A., 1956 (William Jewell College); M.S., 1958 (University of Washington); Sc.D., 1964 (University of Pittsburgh)
- Mark E. Williams** (1985), *Clinical Associate Professor of Epidemiology* – A.B., 1972; M.D., 1976 (The University of North Carolina at Chapel Hill)
- O. Dale Williams** (1970), *Professor of Biostatistics and Director, Center for Health Promotion and Disease Prevention* – B.S., 1962 (Southeastern Louisiana); M.P.H., 1965, Ph.D., 1971 (The University of North Carolina at Chapel Hill)
- Ted M. Williams** (1988), *Lecturer in Environmental Sciences and Engineering* – B.S., 1962 (East Carolina University); M.S.P.H., 1967 (The University of North Carolina at Chapel Hill)
- William E. Wilson, Jr.** (1973), *Adjunct Professor of Air and Industrial Hygiene in the Department of Environmental Sciences and Engineering* – B.S., 1953 (Hendrix College); Ph.D., 1957 (Purdue)

- Kenneth R. Wing** (1977), *Professor of Law and Professor of Health Policy and Administration* – A.B., 1968 (California, Santa Cruz); J.D., 1971, M.P.H., 1972 (Harvard)
- Steven B. Wing** (1985), *Research Assistant Professor of Epidemiology* – B.A., 1975 (Vassar College); M.A., 1980 (Duke University); Ph.D., 1983 (The University of North Carolina at Chapel Hill)
- Ann F. Wolfe** (1983), *Adjunct Associate Professor of Maternal and Child Health* – B.S., 1957 (Bucknell University); M.D., 1961 (Temple University); M.P.H., 1968 (University of California – Berkeley)
- John Joseph Wright** (1939), *Professor of Health Policy and Administration, Emeritus (1970)* – A.B., 1931, M.D., 1935 (Vanderbilt); M.P.H., 1939 (Johns Hopkins)
- Bonnie C. Yankaskas** (1983), *Adjunct Assistant Professor of Epidemiology and Research Assistant Professor of Radiology* – B.A., 1967 (Simmons College); M.P.H., 1973 (Yale); Ph.D., 1982 (The University of North Carolina at Chapel Hill)
- David Zalkind** (1979), *Adjunct Associate Professor of Biostatistics* – B.A., 1967 (Harvard); M.S., 1968 (Stanford University); Ph.D., 1972 (Johns Hopkins University)
- William M. Zelman** (1978), *Associate Professor of Health Policy and Administration* – B.A., 1964 (San Francisco State College); M.A., 1966, Ph.D., 1969 (Washington); M.Acc., 1977, C.P.A., 1978 (Denver)



# Courses of Instruction



<b>BIOS</b>	Biostatistics
<b>ENVR</b>	Environmental Sciences and Engineering
<b>EPID</b>	Epidemiology
<b>HBHE</b>	Health Behavior and Health Education
<b>HPAA</b>	Health Policy and Administration
<b>MHCH</b>	Maternal and Child Health
<b>NUTR</b>	Nutrition
<b>PALP</b>	Parasitology and Laboratory Practice
<b>PHNU</b>	Public Health Nursing

Note: Courses numbered 100 through 199 are for advanced undergraduates and graduates and those numbered from 200 to 399 are for graduates only.

## Department of Biostatistics

- BIOS 97** **Readings in Biostatistics** (1ff13). Directed readings or laboratory study. May be taken more than once. Two to six laboratory hours a week. Staff.
- BIOS 99** **Honors Research in Biostatistics** (3). Prerequisite, BIOS 97. Directed research. Written and oral reports required. *Fall, spring and summer.* Staff.
- BIOS 101** **Fundamentals of Biostatistics** (3) Introduction to procedures in collection, summarization, analysis, and presentation of data. Topics include sampling, experimentation, measurement, descriptive statistics, probability, confidence intervals, and tests of hypotheses. *Fall and summer.* Quade.
- BIOS 106** **Mathematical Methods in Biostatistics** (1 each). Prerequisite, MATH 32 (for 106 and 107), MATH 147 (for 108), or equivalents. Special mathematical techniques necessary for biostatistics. BIOS 106: topics in calculus; BIOS 107; topics in elementary matrix theory; BIOS 108: topics in advanced matrix theory. *Summer.* Staff.
- BIOS 110** **Principles of Statistical Inference** (3). Prerequisite, permission of the instructor required except for majors in School of Public Health who have knowledge of basic statistics. Major topics include elementary probability theory, probability distributions, estimation, tests of hypotheses, chi-squared procedures, regression, and correlation. *Fall and spring.* Turnbull, Symons.
- BIOS 111** **Introduction to Statistical Computing and Data Management** (3). Prerequisite, BIOS 101 or equivalent, and permission of instructor (Except for majors in the School of Public Health). Introduction to use of computers to process and analyze data, components of digital computers, characteristics of magnetic storage devices, use of JCL and utility programs, concepts and techniques of research data management, use of statistical program packages and interpretation. *Fall and spring.* Helms and Hosking.
- BIOS 120** **Special Techniques in Biometry** (1-3). Special topics of current interest in biometry. *Fall, spring and summer.* Staff.
- BIOS 124** **Some Quantitative Methods in Planning and Evaluation** (HPAA 224) (3). Prerequisite, BIOS 101 or equivalent or permission of instructor. Planning cycle, methods overview, data sources, PERT, budgeting, health indices, measurement of goal fulfillment, achievement, effectiveness, efficiency, research designs, benefit cost analysis, decision analysis, probability utility, and decision trees. *Spring.* Coulter.
- BIOS 130** **Research Issues in Mental Health Statistics** (3). Prerequisites, BIOS 105 and EPID 160, or permission of instructor. Concepts of measurement, history, and current status of classification schemata for mental disorders, methods of data analysis, and research designs. *Spring.* Turnbull.
- BIOS 135** **Probability and Statistics** (4). Prerequisite, MATH 32 or equivalent. Basics of probability; random variables and their probability distributions; special distributions, including the binomial, Poisson, normal, gamma; expectation and moments; linear combinations of random variables. Elements of estimation and hypothesis testing; analysis of variance; multiple regression, analysis of categorical data, some nonparametric methods. Particular attention is given to the statistical treatment of environmental science and engineering problems. *Fall.* Symons.

- BIOS 140** **Problems in Biostatistics** (1 or more). Prerequisites to be arranged with the faculty in each case. A course for students of public health who wish to make a study of some special problem in the statistics of the life sciences and public health. *Fall, spring and summer.* Staff.
- BIOS 145** **Principles of Experimental Analysis** (3). Prerequisite, Biostatistics 115 or 135 or equivalent and permission of instructor except for majors in School of Public Health. Continuation of Biostatistics 115; the analysis of experimental and observational data, including multiple regression, and analysis of variance and covariance. *Fall and spring.* Chambless.
- BIOS 150** **Elements of Probability and Statistical Inference I.** (3). Prerequisite, MATH 32 or equivalent. Fundamentals of probability theory; descriptive statistics; fundamentals of statistical inference, including estimation and hypothesis testing. *Fall.* Shachtman.
- BIOS 160** **Probability and Statistical Inference I** (3). Prerequisite, MATH 32 or equivalent. Introduction to probability; discrete and continuous random variables; expectation theory; bivariate and multivariate distribution theory; regression and correlation; linear functions of random variables; theory of sampling; introduction to estimation and hypothesis testing. *Fall.* Kupper.
- BIOS 161** **Probability and Statistical Inference II** (3). Prerequisite, BIOS 160. Distribution of functions of random variables; central limit theorem; estimation theory; maximum likelihood methods; hypothesis testing; power, Neyman-Pearson Theorem, likelihood ratio tests, non-central distributions. *Spring.* Kupper.
- BIOS 162** **Introductory Applied Statistics** (3). Prerequisites, BIOS 111 and 150 or equivalents. Approaches to problems of description, and goodness of fit, univariate location and scale, bivariate independence and correlation, and comparison of independent or matched samples, involving categorical, discrete, normal, or ranked data. *Spring.* Quade.
- BIOS 163** **Introduction to Linear Models** (3). Prerequisites, BIOS 107, 111, 145, 150, or equivalents. Regression analysis in matrix terms, general linear hypothesis, diagnostics, model building. One- and two-day ANOVA with fixed or random effects. Power; algorithms; analysis of covariance. *Fall.* Muller.
- BIOS 164** **Sample Survey Methodology** (STAT 104) (3). Prerequisite, BIOS 150 or equivalent or permission of instructor. Fundamental principles and methods associated with survey sampling, giving primary attention to as non-mathematical 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 non-sampling 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.
- BIOS 165** **Analysis of Categorical Data** (3). Prerequisites, BIOS 145, 150, and 162 or permission of instructor. Introduction to the analysis of categorized data: rates, ratios, and proportions; relative risk and odds ratios; Cochran-Mantel-Haenszel procedure; survivorship and life table methods; linear models for categorical data. Applications in demography, epidemiology, and medicine. *Fall.* Koch.
- BIOS 166** **Applied Multivariate Analysis** (STAT 160) (3). Prerequisite, BIOS 163 or equivalent. 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. *Spring.* Muller.

- BIOS 167 Applied Stochastic Processes** (Operations Research and Systems Analysis 167) (3). Prerequisite, BIOS 161 or equivalent. Markov chains, Poisson processes and extensions, epidemic models, branching processes and other stochastic models of empirical processes. Disease, population, and other biostatistical applications. *Fall and Spring*. Sen.
- BIOS 168 Design of Public Health Studies** (3). Prerequisites, BIOS 145, 150 or equivalents. Statistical concepts in basic Public Health study designs: cross-sectional, case-control, prospective and experimental (including clinical trials). Validity, measurement of response, sample size determination, matching and random allocation methods. *Summer*. Davis.
- BIOS 170 Demographic Techniques I** (3). Prerequisite: BIOS 101 or equivalent. Source and interpretation of demographic data; rates and ratios, standardization, complete and abridged life tables; estimation and projections of fertility, mortality, migration, and population composition. *Fall*. Suchindran.
- BIOS 180 Introductory Survivorship Analysis** (3). Prerequisite, BIOS 161 or permission of instructor. Introduction to concepts and techniques used in the analysis of time to event data, including censoring, hazard rates, estimation of survival curves, regression techniques, applications to clinical trials. *Spring*. Staff.
- BIOS 191 Field Observations in Biostatistics** (1). Field visits to, and evaluation of, major nonacademic biostatistical programs in the Research Triangle area. Field Fee \$25.00. *Fall*. Turnbull.
- BIOS 213 Data Management in Biostatistics** (3). Prerequisite, BIOS 111 or equivalent. Techniques for designing, implementing, and operating computerized data management systems for large studies with particular emphasis on collaborative medical studies. Experience in programming in a procedural language (PL-1, FORTRAN, C, BASIC, etc.) is assumed. *Spring and Summer*. Hosking.
- BIOS 215 Health Data Processing Laboratory** (1-3). Prerequisite, BIOS 213. A laboratory course for students who wish to gain experience in the data processing aspects of current projects and collaborative medical studies of the Department. *Two or more hours a week, fall, spring, and summer*. Hosking.
- BIOS 240 Specialized Methods in Health Statistics** (1 or more). Prerequisite, permission of the instructor. Statistical theory applied to a special program area of timely importance in the life sciences and public health. Lectures, seminars and/or laboratory work, according to the nature of the special area under study. *Fall, spring, and summer*. Staff.
- BIOS 250 Advanced Techniques in Biometry** (1-3). Prerequisites, BIOS 161 and 163; or equivalents. Permission of instructor. Three separate modules presenting advanced techniques in biometry (not the same selection at each offering). A knowledge of elementary computer programming is assumed. *Summer*. Staff.
- BIOS 256 Introduction to Nonparametric Statistics** (STAT 171) (3). Prerequisite, BIOS 161 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.

- BIOS 257 Nonparametric Procedures in Biometric Research (3).** Prerequisite, BIOS 256 or equivalent. Nonparametric point and interval estimation in linear models useful in biometric research. Robust procedures, including those based on ranks, for analyzing designed experiments, bioassays, and clinical trials. *Spring*. Sen.
- BIOS 260 Large Sample Theory (3).** Prerequisite, BIOS 161, corequisite, MATH 121. Stochastic convergence, probability inequalities, empirical distributions, order statistics, central limit theorems, large sample theory of statistical tests and estimates, categorical data models. *Fall*. Sen.
- BIOS 263 Advanced Linear Model Theory (3).** Prerequisites, BIOS 161, 163, MATH 147, MATH 116 or 137. Multivariate normal and related distributions; theory of estimation and statistical inference for multivariate linear models. *Spring*. Stewart.
- BIOS 264 Advanced Survey Sampling Methods (3).** Prerequisite, BIOS 164 or equivalent. Continuation of BIOS 164 for advanced students; stratification, special designs, multistage sampling, cost studies, nonsampling errors, complex survey designs, employing auxiliary information, and other miscellaneous topics. (1988 and alternate years). *Fall*. Kalsbeek.
- BIOS 265 Linear Models in Categorical Data Analysis (3).** Prerequisite, BIOS 161, 163, 165 and 166 or equivalents. Theory of statistical methods for analyzing categorical data by means of linear models, multifactor and multiresponse situations; interpretation of interactions. *Spring*. Koch.
- BIOS 266 Advanced Linear Model Methods (3).** Corequisite, BIOS 263. Analysis of multivariate linear models, including regression, MANOVA, and mixed models, and introduction to modeling covariance matrices. *Spring*. Helms.
- BIOS 267 Linear Models II (4).** Prerequisite, BIOS 263, 266, and/or equivalents. Principal components, discriminant functions, canonical variates, repeated measurements experiments, analysis of longitudinal data, components of variance. *Spring*. Truong.
- BIOS 271 Demographic Techniques II (3).** Prerequisites, BIOS 170 and integral calculus. Methods of analysis when data are deficient; population projection methods; stable and quasistable methods; interrelations among demographic variables; migration analysis; uses of population models. *Spring*. Suchindran.
- BIOS 277 Mathematical Models in Demography (3).** Prerequisite, permission of the instructor. A detailed presentation of natality models, including necessary mathematical methods, and applications; deterministic and stochastic models for population growth, migration, etc. (1989 and alternate years.) *Spring*. Suchindran.
- BIOS 280 Theory and Methods for Survival Analysis (3).** Prerequisite, BIOS 180 or permission of instructor. Continuation of BIOS 180 with detailed discussion of semiparametric likelihoods, time dependent covariates, robustness and tests of assumptions, covariate adjustment, and multivariate analysis. *Fall*. Staff.
- BIOS 281 Statistical Methods in Human Genetics (GNET 281) (3).** Prerequisite, permission of instructor. An introduction to statistical procedures for genetic counseling, testing genetic hypotheses, and estimating genetic parameters from human data. Topics covered include models for monogenic autosomal and x-linkage, mutation and selection, polygenic inheritance. Special emphasis is given to segregation and linkage analysis. (1989 and alternate years.) *Fall*. Staff.

- BIOS 302 Field Training in Public Health Statistics (1-6).** This course is designed to offer students majoring in biostatistics an opportunity for supervised experience in all phases of the statistical programs in the selected health agencies. Open only to students majoring in biostatistics. Field fee \$450. *Summer.* Staff and field counselors.
- BIOS 341 Principles of Statistical Consulting (1).** Biostatistics students only who have completed at least two semesters of course work or who have had equivalent experience. An introduction to the statistical consulting process, emphasizing its non-technical aspects. *Fall and spring.* Staff.
- BIOS 342 Practice in Statistical Consulting (1-3).** Prerequisites BIOS 111, 145, 150, 341 or equivalents, permission of the instructor. Under supervision of a faculty member, the student interacts with research workers in the health sciences, learning to abstract the statistical aspects of substantive problems, to provide appropriate technical assistance, and to communicate statistical results. *Fall, spring, and summer.* Staff.
- BIOS 350 Training in Statistical Teaching in the Health Sciences (2 or more).** Prerequisite, a minimum of one year of graduate work in statistics. Principles of statistical pedagogy. Students are responsible for assistance in teaching elementary statistics to students in the health sciences. Students work under the supervision of the faculty with whom they have regular discussions of methods, content, and evaluation of performance. *Fall, spring and summer.* Staff.
- BIOS 389 Research Seminar in Biostatistics (1-3).** Prerequisite, permission of the instructor. Seminar on new research developments in selected biostatistical topics. *Fall and spring.* Staff.
- BIOS 390 Research in Biostatistics (2 or more).** Individual arrangements may be made by the advanced students to spend part or all of his/her time in supervised investigation of selected problems in statistics. *Fall, spring and summer.* Staff.
- BIOS 392 Master's Paper (1-3).** *Fall, spring, and summer.* Staff.
- BIOS 393 Master's Thesis (0-6).** *Fall, spring, and summer.* Staff.
- BIOS 394 Doctoral Dissertation (0-9).** *Fall, spring, and summer.* Staff.
- BIOS 400 General Registration (0)**

### Department of Environmental Sciences and Engineering

- ENVR 51 Environmental Protection (3).** Prerequisite, natural science requirement of the General College. A man-centered study of the health, economic, ecological and aesthetic effects of our use of water, air and land. The physical, biological and chemical processes that occur in nature are studied, particularly as they relate to man's activities and his generation of waste residues, heat, noise and radiation. Methods of control and for abatement of environmental degradation are presented. *Three lecture hours a week, fall, spring.* Francisco.
- ENVR 99 Undergraduate Research (3).** Directed readings or laboratory study. Written report is required. May be taken more than once for credit. *6-9 hours per week, fall, spring and summer.* Staff.

- ENVR 100 Reading in Environmental Sciences and Engineering (1-6).** Prerequisite, permission required for students outside the Department. Extensive library study of a specific subject in environmental sciences and engineering. The subject and requirements of the project are arranged with the faculty in each instance. *Fall, spring and summer.* Staff.
- ENVR 101 Survey of Environmental Problems (3).** A survey of basic environmental issues for the nontechnologist, including physical dynamics of the natural environment, specific environmental problems and quality control techniques. *Spring.* Lamb, Crawford-Brown.
- ENVR 110 Principles of Chemical Carcinogenesis (2).** Review of DNA structure, replication, repair and the control of these processes. Bioactivation of carcinogens and the interaction of activated metabolites with DNA will also be covered. *Spring.* Gold.
- ENVR 111 Introduction to Environmental Policy (3).** Current issues in environmental protection. Analysis of environmental problems and decisions from the viewpoints of the various disciplines concerned with risk, policy development and environmental management. *Fall.* Shiffman.
- ENVR 117 Engineered Water Systems and Health (3).** Prerequisite, BIOS 105, MATH 34 or equivalents. Permission of instructor required. The quantitative assessment of the effects of water supply and wastewater disposal practices on infectious and environmentally derived diseases. Examples drawn from developed and under-developed countries. Attention given to implications for engineering design. *Fall.* Briscoe.
- ENVR 118 Quantitative Studies for Environmental Sciences (3).** Applied mathematics from the viewpoint of those studying environmental science. Specific aspects of differential and integral calculus are developed as needed in environmental hygiene. *Second summer session.* Reist.
- ENVR 122 Water Chemistry (4).** Prerequisites, CHEM 11 and CHEM 21 or equivalents. Principles and applications of water chemistry. Proton transfer, solubility, complex formation, and redox reactions in natural waters are discussed. Thermodynamic background for equilibrium calculations is presented. *Three lecture and two laboratory hours a week, fall.* Johnson, Singer.
- ENVR 123 Organic Materials in Natural Waters (3).** Prerequisites, organic chemistry, instrumental analysis or permission of the instructor. Origins of natural product organic materials in rivers and lakes. Survey of synthetic organic waste sources, microbial transformations, and metal transport properties. Organic water quality monitoring and rationale for water quality criteria and standards. *Spring, alternate years.* Christman.
- ENVR 124 Environmental Kinetics of Chemistry and Biology (2).** Prerequisites, ENVR 122. Rates of chemical and biological processes of environmental systems. Theory and models of gas and solution kinetics. Applications are primarily to the chemical kinetics of complex reactions in aqueous solution. *Spring.* Johnson.
- ENVR 127 Oceanography (BIOL 126, MASC 101) (3).** Prerequisites, BIOL 11, CHEM 21 and PHYS 25 and permission of instructor. An interdisciplinary study of the sea and the interrelationships of marine processes. *Three lecture hours a week, fall and spring.* Neumann, Kuenzler, Frankenberg.

- ENVR 128 Chemical Oceanography** (MASC 105) (4). Prerequisites, one semester of physical chemistry or ENVR 122, CHEM 180 or equivalent. Variation and abundance of the sea water constituents, and the chemical, physical and biological processes contributing to their distribution as well as problems of dispersion of conservative and nonconservative substances are considered. *Spring*. Martens, Johnson.
- ENVR 129 Spectroscopic Principles for Environmental Analysis** (3). Prerequisites, Organic and Analytical Chemistry. Fundamentals of several spectroscopic methods including mass spectroscopy are introduced. Emphasis on interpretation and problem solving applied to environmental analytical evaluations. *Fall*. Harvey.
- ENVR 131 Biology in Environmental Science** (3). Prerequisite, general chemistry. An introduction to biology, including principles of biochemistry, cell structure, classification, and ecology. Laboratory emphasizes techniques utilized in measurement and control of environmental pollution. *Two lecture and two laboratory hours a week, spring*. Francisco.
- ENVR 132 Limnology and Water Pollution** (3). Prerequisites, two semesters of chemistry or ENVR 122. The basic determinants of water quality and limnological principles are used to define the ecology of clean and polluted aquatic environments, including lakes, reservoirs and rivers. *Two lecture and two laboratory hours a week, fall and spring*. Weiss.
- ENVR 133 Environmental Health and the Aquatic Environment** (3). Prerequisite, ENVR 135 or equivalent. Environmental biology as it relates to the health of man and the environment. Includes risk assessment process for aquatic pollution, wastewater treatment, aquatic toxicology, infectious agents, indicator organisms, and bioassays. *Two lecture and three laboratory hours a week, fall*. Pfaender, Sobsey, staff.
- ENVR 134 Environmental Microbiology** (3). Prerequisites, organic chemistry, ENVR 131 or ENVR 133, general biology, or permission of instructor. Principles of general microbiology; an examination of the microbial world with emphasis on nonpathogenic bacteria; their cytology, growth, physiology, and significance in the environment with special attention given to treatment processes. *Two lecture and three laboratory hours a week, spring*. Pfaender.
- ENVR 135 Ecology** (BIOL, 102) (3). Prerequisite, BIOL 11-11L. A study of the principles governing the environmental interrelationships of organisms, populations, communities, and ecosystems. *Fall and spring*. Stiven, Reice, Peet, White, Vitousek.
- ENVR 135L Ecology Laboratory** (BIOL 102L) (1). Corequisite, ENVR 135. *Three laboratory hours a week, fall and spring*. Stiven, Reice, Peet, White, Vitousek.
- ENVR 136 Biological Oceanography** (BIOL 140, MASC 104) (4). Prerequisites, BIOL 54 or BIOL 105 or permission of instructor. Physical, chemical and biological factors characterizing estuarine and marine environments emphasizing factors controlling plant and animal populations including methods of analysis, sampling, and identification. *Five lecture and laboratory hours a week, summer*. Staff.
- ENVR 137 Ecology of Wetlands** (4) (MASC 137). Prerequisites, one year biology, one semester ecology, one year chemistry and permission of the instructor. An introduction to the functioning of freshwater and estuarine marsh and swamp ecosystems, with emphasis on the systems of the southeastern U.S. *Fall*. Kuenzler.

- ENVR 138 Environmental Virology** (4). Prerequisite, introductory course in microbiology; or ENVR 131 or 133; or permission. Ecological, environmental health and fundamental aspects of virology, with special emphasis on viruses in air, water, and food. *Three lecture and three laboratory hours a week, spring.* Sobsey.
- ENVR 141 Air and Industrial Hygiene** (3). Not open to students who have received credit for ENVR 142. Problem definition, sources of information, health effects, legislative framework, and control methods. Hazard recognition, evaluation, and remediation approaches for community and industrial environments. *Fall.* Fox, Fraser.
- ENVR 142 Survey of Air and Industrial Hygiene** (3). A survey of current problems in air pollution, air pollution control and industrial hygiene including potential for exposure to disease-causing agents, standards and standards setting and methods of control. *First summer session.* Staff.
- ENVR 143 Applied Physiology and Toxicology** (3). Prerequisite, admission to graduate standing or permission of instructor. Physiologic responses of the various organs and organ systems of the body to the physical and chemical stresses of the environment are considered. The methods of industrial toxicology and the toxicological basis for the Threshold Limit Values will be discussed. Concentration-Time equivalence, routes of entry, synergism will be investigated. *Fall.* Gold.
- ENVR 144 Industrial Toxicology** (2). Toxicological assessment of and a case presentation of related exposure is given. A conceptual approach is utilized to design appropriate programs to prevent worker ill health due to industrial toxicant exposure. *Two lecture hours per week, spring.* Staff.
- ENVR 145 Introduction to Aerosol Science** (4). Prerequisite, admission to the Department of Environmental Sciences and Engineering or permission of the instructor. Physical and chemical principles underlying behavior of particles suspended in air. Topics include rectilinear and curvilinear motion of the particles in a force field, diffusion, evaporation and condensation, electrical and optical properties and particle coagulation, as well as the behavior of the cloud *in toto*. *Three lecture and two laboratory hours a week, fall.* Reist, Leith.
- ENVR 145L Aerosol Science Laboratory** (2). Pre- or corequisite, ENVR 145. Basic laboratory exercises in aerosol sciences. *Fall.* Reist, Leith.
- ENVR 147 Occupational Safety** (2). Fundamentals of occupational safety with emphasis on legislation and organization of industrial safety programs including hazard recognition, analysis, control and motivational factors pertaining to industrial accident prevention. *Fall.* Staff.
- ENVR 148 Air Pollution Meteorology** (3). Prerequisites GEOG 110, MATH 32, PHYS 25 or equivalents. Principles of boundary layer meteorology; theory and modeling of transport and diffusion of air pollutants; plume rise; air pollution climatology; data selection for site design; role of meteorology in air quality management. *Spring.* Slater.
- ENVR 149 Health Hazards of Industrial Operation** (3). Prerequisite, ENVR 141. An introduction of the health hazards associated with the various unit operations of industry. Field trips to local industries are planned. *Spring.* Flynn.
- ENVR 153 American Environmental Policy (PUPA 153)** (3). The development of U.S. environmental policies and management organizations. Students will be asked to analyze past and present policy options so as to reach a reasoned basis for choices among them. *Spring.* Andrews.

- ENVR 161 Elements of Radiological Hygiene (2).** Prerequisite, calculus. The physics of ionizing radiations, their interactions with matter, biological effects and principles of radiation protection are presented. *Spring and second summer session.* Watson, Willhoit.
- ENVR 162 Modern Physics for Environmental Science (3).** Prerequisite, ENVR 118. Modern physics with the emphasis on radioactivity and ionizing radiation. *Fall.* Watson.
- ENVR 163 Radiation Instrumentation (3).** A laboratory study of measurements of radioactivity with emphasis on the principles of operation of the instruments. *One lecture and four laboratory hours a week, spring.* Crawford-Brown.
- ENVR 164 Field Observations in Radiological Hygiene (2).** Prerequisite, permission of instructor. Field observations of health physics practices at nuclear fuel cycle facilities and government nuclear facilities. Field fee, \$175.00. *Spring.* Watson.
- ENVR 165 Advanced Radiological Laboratory (2).** Intensive radiological laboratory training at Oak Ridge Associated Universities. Tour of research facilities at Oak Ridge National Laboratory. Field fee, \$200.00. *Spring.* Crawford-Brown.
- ENVR 166 Environmental Radioactivity (3).** Prerequisites, calculus, Environmental Sciences 162 or equivalent. Ecology and assessment of radioactivity in the environment. Description of natural processes which govern behavior of radioactivity in the environment and introduction to mathematical models for predicting food chain transport.
- ENVR 167 Introduction to Medical Physics (2).** Permission of the instructor required. The physics of radiation therapy, diagnostic radiology, and nuclear medicine are introduced by practicing clinical physicists. *Fall.* Crawford-Brown, Chaney, Johnston, Washburn.
- ENVR 171 Water Quality Evaluation and Control (3).** Characteristics of water as a resource. Water uses, trends, water quality concepts, measurements, criteria, problems, pollutants. Regulation of water quality. *Fall.* Lamb.
- ENVR 174 Water and Wastes Treatment Processes (4).** Prerequisite, ENVR 122. Permission of instructor required, or corequisite, ENVR 131. A study of unit processes for water and waste water treatment. Processes discussed include gas transfer, coagulation, disinfection, absorption, demineralization, sedimentation, filtration, aerobic and anaerobic biological treatment. *Three lecture and two lab hours a week, spring.* Lamb, Singer.
- ENVR 176 Ground Water Engineering (3).** Prerequisites, MATH 31 and 32. Use of analytical solutions to define ground water movement and contaminant transport in subsurface environments. *Three lecture hours a week, fall.* Miller.
- ENVR 183 Special Topics in Water Resources (2).** Prerequisite, permission of instructor. Interdisciplinary exploration of the principal issues involved in water resource planning, conservation, development and management. Includes the nature of water resources, principal water uses and conflicts, public objectives and policy issues, institutional arrangements, legal framework, planning and governmental agency programs. *Spring.* Faculty.
- ENVR 200 Problems in Environmental Sciences and Engineering (1 or more).** Departmental permission required. For students outside the Department who desire to undertake individual study of a specific problem in environmental sciences

and engineering. The subject and requirements of the project are arranged with the faculty in each individual instance. *Two or more hours a week, fall, spring, summer.* Staff.

- ENVR 210 Issues in Environmental Management (1).** The practice of environmental management will be presented by persons engaged in professional practice in government, industry, research and consulting. *Fall.* Shiffman, Andrews.
- ENVR 211 Methods in Environmental Management (3).** The strategies and techniques used in the management of environmental protection programs. Safety evaluations, regulatory processes, institutional arrangements and organization responses. *Fall.* Shiffman.
- ENVR 212 Administration of Environmental Protection Programs (3).** Organization and operation of environmental protection programs to include administrative processes, program analysis, performance evaluation and project management methods. *Spring.* Shiffman.
- ENVR 217 Systems Analysis in Environmental Planning (3).** Prerequisite, calculus. Systems approach and scientific method. Various approaches to system design. Mathematical models. Production, benefit, loss and cost functions. Constrained optimization. Marginal analysis. Linear programming. Application of techniques to systems for the management of environmental quality. *Fall.* Staff.
- ENVR 219 Environmental Systems Analysis (PLAN 219) (3).** Prerequisite, permission of the instructor. Multiobjective programming and planning techniques applied to environmental resource management. Review of selected models for water quantity and quality, air quality, land use, and public facilities location. *Fall.* Whittington.
- ENVR 221 Instrumental Methods of Analysis (3).** Prerequisites, inorganic and analytical chemistry and permission of the instructor. Principles and techniques of instrumental chemical analysis, including optical, electrical and separation methods. Laboratory sessions include adsorption, spectrophotometry, potentiometry, amperometry, gas chromatography, GC-mass spectrometry. *Two lecture and four laboratory hours a week, spring.* Shuman.
- ENVR 222 Special Topics in Aquatic Chemistry (2).** Prerequisite, ENVR 122. Modern topics in aquatic chemistry, application of chemical concepts to the understanding and control of man's aquatic environment. This course may be taken for credit more than once as the special topics change. *Fall, spring.* Staff.
- ENVR 223 Trace Elements in the Environment (3).** Prerequisite, ENVR 122 or equivalent. Transport and transformation of selected trace elements in the environment including global cycles, societal flow, models and experimental approaches to chemical speciation. Health effects, societal targets, drinking water standards. *Fall.* Shuman.
- ENVR 225 Analysis of Trace Organics (3).** Prerequisites, CHEM 61-62, CHEM 181-182 and PHYS 24-25. Permission of instructor if prerequisites not met. Basic principles of isolation, separation and identification of trace organic chemicals in environmental and/or biological samples including solvent extraction, liquid and gas chromatography and mass spectrometry. *Spring.* Hass, Albro.
- ENVR 229 Topics in Practice of Environmental Analysis (3).** Prerequisite, ENVR 129. Spectroscopic principles from the first semester are applied through demonstration and hands-on experimentation to a variety of environmental analytical problems. Concepts of sampling and sample treatment complete the analysis protocol. *Spring.* Harvey.

- ENVR 231A Limnological Methods (2).** Prerequisites, basic limnology and statistics; must register for 231B in the second session. Professional preparation for field study of freshwater aquatic systems. *Two lecture and ten laboratory hours a week, first summer session.* Francisco.
- ENVR 231B Limnological Methods (2).** Prerequisite, ENVR 231A. *Second summer session.* Francisco.
- ENVR 232 Special Topics in Aquatic Biology (2).** Prerequisite, ENVR 132 or permission of instructor. Topics of contemporary concern to the management of the aquatic environment, e.g., movement of pesticides through aquatic food chains, growth of algae and nutrient levels, etc., will be discussed in depth. Course may be taken more than once as new topics are offered. *Spring.* Weiss, Kuenzler.
- ENVR 233 Microbial Ecology (4).** Prerequisite, ENVR 134 or permission of instructor. A consideration of the factors which influence the distribution and inter-relationships of microorganisms in their natural habitats. *Two lecture and four laboratory hours a week, fall.* Pfaender.
- ENVR 235 Ecology of Phytoplankton (BIOL 245) (4).** Prerequisites, ENVR 127 or 132, ENVR 135, and permission of instructor. The relationships of planktonic algae to the environment, with emphasis on nutrition, productivity, aquatic distributions, and impacts on water quality. *Three lecture and two laboratory hours a week, spring.* Kuenzler.
- ENVR 236 Limnological Studies (2).** Prerequisites, ENVR 132 or equivalent, permission of instructor. Limnological studies carried out by members of the faculty will be examined in terms of design, implementation, results and conclusions as well as lessons for future projects. *Spring.* Weiss, staff.
- ENVR 237 Molecular Approaches to Environmental Toxicology (3).** Prerequisites, Biochemistry 100 or Biology 164 or Physiology 140 or Environmental Sciences 143 or equivalents. This course will explore how study of biological phenomena at the molecular level (particularly in molecular biology and immunology) are being applied to elucidation of problems in environmental toxicology, with illustrations drawn from the current literature. *Three lecture hours per week, spring.* Ball.
- ENVR 241 Industrial Ventilation Design (3).** Prerequisites, engineering degree and permission of instructor. Corequisite, ENVR 241L. Engineering design of industrial exhaust systems and control of heat exposures in occupied spaces. *Fall.* Harris
- ENVR 241L Industrial Ventilation Laboratory (1).** Corequisite, ENVR 241. Basic laboratory exercises in aerosol sciences. *Fall.* Harris, Hickey.
- ENVR 242 Industrial Hygiene Practice (3).** Prerequisites, ENVR 143 and ENVR 145. Methodology and philosophy of evaluating the industrial environment for stresses and toxic substances which affect the health of the worker. *Spring.* Fraser.
- ENVR 243 Instrumentation and Data Acquisition (3).** Permission of instructor required. Concepts and principles employed in electronic-aided measurements of air quality including acquisition of measurements, principles of input transaction and online minicomputers. *Fall.* Jeffries.

- ENVR 244 Industrial Hygiene Laboratory (3).** Prerequisite, ENVR 145; corequisite, ENVR 242. Physical and chemical techniques for measuring industrial exposures. Practical experiments illustrate techniques applicable to the industrial hygiene survey. *One lecture and four laboratory hours a week, spring.* Reist.
- ENVR 245 Air Pollution Control (3).** Prerequisite, ENVR 141. Engineering control of air pollution control systems and discussion of air pollution regulation and standards. *Spring.* Harris.
- ENVR 246 Air Pollution, Measuring, Monitoring and Survey (3).** Permission of instructor required. Theory and application of the analysis of samples; manual methods; sensor calibration; site selection, monitoring; gas and aerosol samples. *Two lecture and four laboratory hours per week, spring.* Jeffries, Fox.
- ENVR 247 Chemistry of the Troposphere (3).** Prerequisites, physical chemistry and permission of instructor. Sources, variability, transformation and sinks of atmospheric trace constituents in the troposphere are covered. Photochemistry and other chemical aspects of the atmosphere are covered. *Spring.* Fox.
- ENVR 248 Industrial Medicine—Practice and Management (3).** Prerequisite, ENVR 143 or equivalent. The technical factors to be considered in decision making and the roles and responsibilities of the industrial physician, nurse and industrial hygienist in the management of the work force. The etiology, diagnosis, treatment and prevention of diseases and stresses found in modern industry are discussed with applications for the use of general practitioners, health administrators, public health nurses and industrial professionals. *Spring.* Fraser.
- ENVR 252 Environmental Risk Assessment (3).** Prerequisite, permission of instructor. The characterization of population exposures and the evidence used to identify environmental substances that may pose a human health risk. The theory and methods for quantitatively estimating risk. *Spring.* Turner.
- ENVR 253 Environmental Policy Analysis (PLAN 231) (3).** Structure and dynamics of environmental policy-making as it affects environmental management. Legislation, regulation, administration and the roles of science and analysis in political decisions. *Three lecture hours a week, fall.* Andrews.
- ENVR 254 Food Safety Policy (3).** Food safety will be discussed in respect to the development and implementation of policy, food legislation, regulation and other components of food safety programs. *Three lecture hours a week, spring.* Shiffman.
- ENVR 255 Management of Hazardous Waste (3).** Prerequisite, CHEM 61 or equivalent. The classification, chemistry and toxicology of hazardous wastes will be presented. Control technologies, regulatory policies and management strategies are examined. *Fall.* Turner.
- ENVR 259 Analytic Thought and Environmental Risk (3).** Prerequisite, permission of instructor. The principles of logical analysis are developed and applied to environmental problems. Concepts such as evidence, inference, and proof are formalized for calculations of environmental risk. *Three lecture hours per week, spring.* Crawford-Brown.
- ENVR 261 Radiation Biophysics (3).** Prerequisite, ENVR 162 or equivalent. The biophysical factors of radiation quality and the response of cell populations are discussed. Current models of the mechanisms of radiation action on biological systems are reviewed. Microdosimetry and dosimetry at interfaces are also covered. *Spring.* Crawford-Brown.

- ENVR 263 Radiation Hazards Evaluation I (3).** Prerequisite, ENVR 162. The principles and techniques of external and internal radiation hazards evaluation are studied. The interaction of radiation with matter and the fundamentals of radiation dosimetry are presented. *Spring.* Watson.
- ENVR 264 Radiation Hazards Evaluation II (3).** Prerequisites, ENVR 261, and ENVR 263. Internal and external hazards of ionizing radiation are evaluated in detail. Problems in hazards evaluation and radiation protection of types included in certification examinations by the American Board of Health Physics are studied. *Fall.* Watson.
- ENVR 267 Medical Physics Rotation (3).** Students will spend 9 hours per week in detailed discussion and application of specialized topics of Medical Physics within the Radiology Dept. Time will be spent in therapy, diagnosis and imaging. *Spring.* Crawford-Brown, Chaney, Johnston and Washburn.
- ENVR 271 Engineering Modeling of Aquatic Systems (3).** Prerequisite, permission of instructor. Examination of selected physical, chemical, and biological phenomena in natural aquatic systems. Use of mathematical models for water quality prediction and control. *Spring, alternate years with ENVR 272.* Lauria.
- ENVR 272 Design of Water Systems (3).** Permission of instructor required. Use of mathematical models and computer programs for designing water systems, including pumping stations, reservoirs, water distribution and wastewater collection networks. *Spring, alternate years with ENVR 271.* Lauria.
- ENVR 273 Water and Wastewater Treatment Plant Design (3).** Prerequisite, ENVR 174. The application of the theory of water and wastewater treatment to the design of municipal treatment facilities. The course includes the principles of design and modern design practices. The seminar is devoted to the design and analysis of design of specific works for water and wastewater treatment. *Summer.* Briscoe.
- ENVR 274 Advanced Water and Wastes Treatment Processes I (3).** Prerequisite, ENVR 122 or permission of instructor. The first of a 2-course in-depth presentation of the applications of chemical, physical, and biological principles to water and wastewater treatment. Process considerations including equilibria, kinetics and reactor performance are presented. Physical and chemical processes are highlighted including sedimentation, filtration, absorption, ion exchange, coagulation, precipitation, Laboratory exercises illustrate the process principles. *Fall.* Singer, DiGiano.
- ENVR 275 Advanced Water and Wastes Treatment Processes II (3).** Prerequisites, ENVR 274, ENVR 131 or permission of instructor. Continuation of ENVR 274 with emphasis on wastewater treatment processes including aerobic and anaerobic biological treatment, gas transfer, solids handling, nutrient removal, and membrane processes. Laboratory exercises are included. *Spring.* Singer, DiGiano.
- ENVR 276 Industrial Water Quality Management (3).** Prerequisites ENVR 171 and ENVR 174, or equivalent. Water supply and wastes disposal problems of industries. Special water quality requirements and treatment methods are reviewed in a comprehensive fashion. The nature of industrial wastes, pollutional difficulties resulting from their discharge, and methods of attacking wastes problems are discussed, including technical administrative and regulatory aspects. Emphasis is placed on the diverse nature of these problems and the methodology employed in their solution. *Two lecture and two seminar hours a week, fall.* Lamb.

- ENVR 277 Diffusive Transport in Environmental Systems (3).** Prerequisites, ENVR 274 and permission of instructor. Diffusive transport at phase boundaries and within phases and porous media. Applications to process design of adsorption, gas-transfer, and bio-oxidation systems and to analyze transport in natural environments. *Fall, alternate years.* DiGiano.
- ENVR 278 Development of a Water Project (3).** Prerequisite, permission of instructor. Analysis of a real water project including data collection, preliminary design, evaluation of engineering alternatives, and assessment of feasibility culminating in the preparation of an engineering report. *Two lecture and two seminar hours a week, spring.* Briscoe.
- ENVR 281 Modeling Ground Water Systems (3).** Prerequisite, Permission of Instructor. Numerical modeling methods for solving the partial differential equations governing mass, momentum, and energy in ground water. *Spring.* Miller.
- ENVR 282 Public Investment Theory and Techniques (City and Regional Planning 232) (3).** Theory and techniques of public investment planning and benefit cost analysis involving syntheses of economic, political and technologic aspects. Special focus on project and program evaluation in the Third World. *Spring.* Whittington.
- ENVR 283 Natural Resource Law and Policy (PLAN 233) (3).** Prerequisite, permission of instructor. An examination of the law of resource use and development, its administration and underlying policies. Particular attention to water rights law, regulatory law, and natural resource administration. Regulatory aspects of pollution control programs will be covered. *Fall.* Heath.
- ENVR 284 Water Resources Planning and Policy Analysis (PLAN 234) (3).** Prerequisite, permission of the instructor. Introduction to water resources planning and management. Emphasis on federal and state water resources policies and the development of analytical skills for identification of environmental problems associated with urban water resources development. *Fall.* Hill.
- ENVR 300 Research in Environmental Sciences and Engineering (2 or more).** Prerequisite, consultation with the faculty and approval of subject and proposed program. Research in environmental sciences and engineering for students outside the Department. *Four or more hours a week, fall, spring, summer.* Staff.
- ENVR 301 Seminar in Environmental Sciences and Engineering (1 or more).** Readings and discussions to provide opportunity to develop new concepts and topics in various aspects of environmental sciences and engineering. *Fall, spring, and summer.* Staff.
- ENVR 311 Seminar in Environmental Health (1).** Open by special arrangement to students doing advanced graduate work. Directed readings and reports on recent advances concerned with environmental health. Reports of current research and review of principal journals in environmental health, sanitary engineering and sanitary sciences. *Two seminar hours a week, fall and spring.* Staff.
- ENVR 314 Seminar on Current Industrial Hygiene Issues (1).** ENVR 242, corequisite; permission of instructor required. Discussion on current topics affecting the field of industrial hygiene. *Two seminar hours per week, spring.* Reist.
- ENVR 320 Research in Environmental Chemistry (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Christman, Johnson, Shuman, Singer, Millington, Harvey.

- ENVR 330 Research in Environmental Biology (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Kuenzler, Weiss, Pfaender, Sobsey, Francisco.
- ENVR 340 Research in Air and Industrial Hygiene (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Battigelli, Fox, Fraser, Harris, Jeffries, Reist, Gold, Hickey, Leith, Kamens.
- ENVR 341 Engineering Research in Air and Industrial Hygiene (1-9).** Prerequisite, consultation with the faculty and approval of the subject and proposed program. *Fall, spring, summer.* Fox, Fraser, Harris, Jeffries, Reist, Hickey.
- ENVR 350 Research in Environmental Management and Protection (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Christman, Shiffman, Turner, Gold, Andrews.
- ENVR 360 Research in Radiological Hygiene (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Watson, Crawford-Brown.
- ENVR 370 Investigations in Water Resources Engineering (1-9).** Prerequisite, consultation with the faculty and approval of subject and proposed program. *Fall, spring, summer.* Lamb, Lauria, Okun, Briscoe, DiGiano, Singer.
- ENVR 392 Master's Technical Report (1-9).** The technical report requirement for MSPH, MPH, and MSEE candidates is satisfied by the extensive study of a problem in environmental sciences and engineering. Study may extend over one or more semesters and credit is assigned accordingly.
- ENVR 393 Master's Thesis (1-9).**
- ENVR 394 Doctoral Dissertation (3-9).**
- ENVR 400 General Registration (0).**

### Department of Epidemiology

- EPID 140 Problems in Epidemiology (1 or more).** A course for students who wish to make an intensive study of some special problems in epidemiology. *Fall, spring, and summer.* Faculty.
- EPID 160 Principles of Epidemiology (2).** Pre- or corequisite, BIOS 101 or BIOS 105 or permission of instructor. An introductory course that considers the meaning and scope of epidemiology and the uses of morbidity, mortality and other vital statistics data in the scientific appraisal of community health. *Two lecture hours a week, fall.* McCann, Wilcosky, Wing.
- EPID 160L Principles of Epidemiology Lab (1).** Co-requisite for EPID 160. Laboratory for EPID 160. Exercises and group discussions. *Fall and spring.* McCann, Wilcosky, Wing.
- EPID 168 Fundamentals of Epidemiology (4).** Permission of instructor required for non-majors. An intensive introduction to epidemiologic concepts and methods for students intending to engage in, collaborate in, or interpret the results of epidemiologic studies. Some familiarity with biomedical concepts may be needed. An alternate to EPID 160 for satisfying the SPH core requirements. *Three lecture and two seminar hours a week, fall.* Schoenbach, Wilcosky, Hulka.

- EPID 175 Health Policy and Aging (HPAA 175) (3).** Critical examination of aging policy in light of empirical findings on the elderly's economic power. Utilization patterns, prevalence of dependency, and the cost-effectiveness of policy options, including long-term care. *Fall.* Weissert.
- EPID 195 Fundamentals of Cancer Biology (PATH 195) (3).** Fundamentals of the biology of cancer. *Fall.* Siegal, Askin, Kaufman.
- EPID 197 Fundamentals of Clinical Oncology (PATH 197) (3).** Overview of clinical management, diagnosis and treatment of cancer. *Spring.* Siegal, Askin, Kaufman.
- EPID 201 Epidemiologic Research Methods (3).** Prerequisites, EPID 168; introductory biostatistics; and permission of instructor. A second-level course on conduct of epidemiologic research. Focuses on dealing with both conceptual problems of applying the scientific method and practical issues encountered in carrying out the work. *Three lecture hours a week, spring.* Fletcher, Savitz.
- EPID 211 Determinants of Communicable Disease (3).** Pre- or corequisite, EPID 160 or equivalent. Biological determinants, changing patterns of communicable diseases, definition of high-risk subpopulations, methods of control. *Three lecture hours a week, fall.* Becker.
- EPID 218 Introduction to Infectious Disease Epidemiology (3).** Pre- or corequisites, introductory-level Epidemiology and Biostatistics, or permission of instructor. Introduction to infectious disease epidemiology. Course will focus on methodology, public health concerns, patterns of transmission, and "newly" discovered infections. *Three lecture hours a week, fall.* Weber.
- EPID 219 Reproductive Epidemiology (3).** Permission of instructor required. Prerequisites, EPID 160 and BIOS 115, or alternatives. Epidemiology of major reproductive health outcomes, including infertility, fetal loss, birth weight, congenital malformations, infant mortality. Current knowledge regarding epidemiology of these outcomes; discussion of methodologic issues specific to reproduction. *Fall.* Savitz.
- EPID 220 Health Promotion/Disease Prevention: Selected Topics (3).** Prerequisite, EPID 168 or permission (see EPID Registrar). Selected topics on the role of lifestyle behavior in modern illness, and on conceptual, methodologic, substantive, and policy issues in health promotion/disease prevention. *Three lecture hours a week, spring.* Schoenbach, Kaplan.
- EPID 222 Epidemiology of Immunizations (3).** Prerequisites, EPID 160 or equivalent. This course will explore the application of epidemiological methods to immunization practices. Topics will include vaccine development, vaccine efficacy, post-licensing evaluation, vaccine coverage and cost/benefit analysis. *Three lecture hours a week, spring.* Weigle, Weber.
- EPID 223 Biochemical Epidemiology (3).** Prerequisites, Introductory epidemiology and biostatistics. Introduction to the use of biochemical markers in epidemiologic research. Emphasis will be placed on markers of genotoxicity such as chromosomal aberrations, sister chromatid exchanges, micronuclei and DNA adducts. *Three lecture hours a week, fall.* Vine.
- EPID 225 Clinical Trials in Epidemiology (3).** Prerequisites, Introductory epidemiology, introductory biostatistics. Systematic overview of principles in design, implementation and analysis of clinical trials. Emphasis on applications in chronic disease epidemiology. In-depth discussion of case examples from cardiovascular disease epidemiology emphasized. *Three lecture hours a week, spring.* Tyroler.

- EPID 232 Methods and Issues in Pharmacoepidemiology (2).** Permission of instructor required. Prerequisites, introductory level epidemiology and biostatistics. Application of the epidemiologic knowledge, methodology and reasoning to the study of the effects (beneficial and adverse) and uses of drugs in human populations. *Summer.* Faculty.
- EPID 233 Cancer Epidemiology and Pathogenesis (3).** Prerequisites, EPID 168 or equivalent, BIOS 105, undergraduate major or strong preparation in the biological sciences. Permission required for nonmajors. Emphasis on integration of epidemiologic data with laboratory and clinical research findings. Issues in epidemiologic research design, analysis and interpretation are presented within the context of substantive epidemiology. *Three lecture hours a week, spring.* Hulka, Morris.
- EPID 249 Genetics of Common Diseases (Genetics 249) (3).** Prerequisites, BIOS 150, GNET 122 or EPID 160, or permission of instructor. Critical analysis of genetic issues in human disease. The genetics of cancer, heart disease, diabetes, mental illness, mental retardation, hypertension and arthritis will be covered. The application of genetic and epidemiological techniques will be examined. *Spring, alternate years.* Swift.
- EPID 250 Reproductive Epid Seminar (2-4).** Prerequisites, Introductory epidemiology, introductory biostatistics, and EPID 219. Permission of instructor required. Detailed review of selected topics in reproductive epidemiology. May be repeated for credit. Wilcox, Savitz, Harlow.
- EPID 256 Cardiovascular Disease Epidemiology (3).** Pre- or corequisites, EPID 160 and BIOS 105, or their equivalents. Review of major issues in cardiovascular disease epidemiology, summarization of relevant pathology and analogies of population determinants and strategies for prevention. *Three lecture hours a week, fall.* Tyroler, Heiss, Davis, Wing.
- EPID 257 Teaching Internship in Epidemiology (4).** Permission of the Chair required. Required of students enrolled in the doctoral program in epidemiology. Outstanding students from other departments eligible if space permits. Provides supervised experience in teaching and course preparation. *Fall, spring and summer.* Faculty.
- EPID 264 Sociocultural Environment and Health: Selected Topics (3).** Prerequisites, EPID 160 or equivalent, basic social science background. Permission of instructor required. Role of social and cultural factors in various disorders. Development of useful frameworks and methods to investigate social environment and health. Emphasis on psychiatric related disorders and on actual projects. Kaplan.
- EPID 266 Epidemiologic Investigation (3).** Prerequisites, EPID 160, EPID 256 and BIOS 110, or their equivalents. Permission of instructor required. A second level course designed for the acquisition of skills in epidemiologic research and the investigation of current issues in cardiovascular disease. Heiss, Davis, Tyroler.
- EPID 268 Advanced Methods in Epidemiology (4).** Prerequisites, EPID 160, or one of its alternatives, BIOS 145, BIOS 111, or their equivalents. Permission of instructor required. This course develops a systematic overview of the methodologic techniques available for observational and experimental epidemiologic investigation at the stages of planning, information and analysis. *Three lecture and two laboratory hours a week, fall.* Kleinbaum.

- EPID 269 Special Topics in Epidemiologic Methods (3).** Prerequisite, EPID 268. Permission of instructor required. A continuation of EPID 268 covering additional methodologic issues. Topics include survival analysis, collinearity, control of error rates, extensions of logistic regression, plus review of selected methodologic literature. *Two lecture hours and two seminar hours a week, spring.* Kleinbaum.
- EPID 270 Psychosocial Epidemiology (3).** Prerequisites, EPID 160, BIOS 105, or equivalent. A critical examination of theory and research on social, economic, and psychological determinants of chronic diseases, with emphasis on cardiovascular diseases and mental health. *Three lecture hours a week, fall.* James, Strogatz.
- EPID 276 Advanced Environmental and Occupational Epidemiology (3).** Prerequisite, EPID 160 or 162 or equivalent; permission of instructor. Designed for epidemiology majors, this course investigates various applications of the principles of epidemiologic research to the evaluation and identification of environmental and occupational health hazards. *Spring.* Shy.
- EPID 280 Hospital Epidemiology (2ffl4).** Permission of instructor required. Prerequisites, EPID 168 and EPID 211 or 218. Comprehensive tutorial on hospital infection control. Topics include: employee health, surveillance, outbreak investigation, environmental sampling and policy formation. Course consists of formal instruction, directed readings and/or independent research. *Fall, spring and summer.* Weber.
- EPID 315 Field Training in Epidemiology (3-6).** Prerequisite, advanced standing. Designed to give epidemiology majors a supervised field experience in population health research. Field fee, \$500.00. *Fall, spring, and summer.* Faculty.
- EPID 360 Research in Epidemiology (2-9).** Prerequisite, permission of instructor. Independent investigation in consultation with an instructor who must assign or approve the subject of research. Credits will vary according to the effort and rigor of the research. *Fall, spring, summer.* Faculty.
- EPID 362 Environmental Epidemiology Seminar (1-3).** Pre- or corequisite: basic course in Epidemiology. Permission of instructors required. Detailed critical reviews of selected topics in environmental epidemiology. Students work collaboratively with faculty members conducting research in environmental and occupational determinants of disease. *Two to six seminar hours a week, spring and fall.* Shy, Wing.
- EPID 368 Epidemiology and Health Policy (2).** Prerequisites, basic course in epidemiology and biostatistics. Epidemiology applied to workings of health services and setting of policies. Topics include health maintenance organizations; the poor and vulnerable groups; cigarette smoking and smokeless tobacco; periodic health examination and screening; health promotion and disease prevention; surgical interventions; medication-related diseases; acquired immune deficiency syndrome; hospice intervention; and aging. Ibrahim.
- EPID 392 Master's Paper (1-6).** *Fall, spring and summer.* Faculty.
- EPID 394 Doctoral Dissertation.** *Fall, spring, and summer.* Faculty.
- EPID 400 General Registration (0).**

## Department of Health Behavior and Health Education

- HBHE 9**     **Freshman Seminar** (3). For freshmen only. A review of the nature of modern health problems and the roles of the individual, the community, the health professions and agencies in medical care and health maintenance. *Fall*. Boatman.
- HBHE 50**     **Personal and Community Health Behavior** (3). Relation of living habits and practices to health maintenance, disease prevention and use of the health care system. *Spring*. Staff.
- HBHE 85**     **Topics in Human Sexuality** (3) Permission of instructor. Examination of cultural, social, psychological and biological aspects of human sexuality. Selected topics include life-cycle sexuality, communication, pregnancy and sex and the law. *Fall and spring*. DeVellis, staff.
- HBHE 90**     **Field Training in Health Education** (4). Prerequisite HBHE 103. Experience as a functioning health educator in a community setting under supervision. Field fee, \$100.00. *Fall, spring, summer*. Boatman and staff.
- HBHE 91**     **Field Training Evaluation** (2). Pre- or corequisite HBHE 90. Permission of instructor. Evaluation of field practice. Written report required. *Fall, spring, summer*. Staff.
- HBHE 97**     **Readings in Health Education** (3-6). Directed readings or laboratory study. Written report required. *Six to twelve hours a week, fall, spring and summer*. Staff.
- HBHE 99**     **Honors in Health Education** (3-6). Prerequisite, HBHE 97. Directed research. Written report required. *Six to twelve hours per week, fall, spring and summer*. Staff.
- HBHE 101**    **Aging and Human Development** (PHNU/HPAA/NUTR) (3). Lectures concerned with biological, physical, emotional, demographic and social aspects of aging. Field trips to institutions and home visits. *Fall*. Staff.
- HBHE 102**    **Community Organization for Health Education** (3). Introduction of community organization in community health education and implications for the function of the community health educator. (Permission required for non-majors). *Two lecture and two laboratory hours per week, fall*. Staff.
- HBHE 103**    **Theory and Practice in Community Health Education** (3). Theory and practice in community health education. Detailed diagnosis of a county. Required for all undergraduate health education majors. *Two lecture and two laboratory hours per week, fall*. Jackson.
- HBHE 104**    **School Organization for Health Education** (3). Introduction to school health education and administration including components and organization of a comprehensive school health program, curriculum design and evaluation. (Permission required for non-majors) *Two lecture and two laboratory hours a week, spring*. Barr.
- HBHE 108**    **Minority Health and Health Services Delivery** (2). The life experiences of ethnic minorities in the United States with special reference to the implications for their participation in health programs. *Two lecture hours per week, spring*. Hatch.

- HBHE 109 Rural Health and Community Action (3).** Permission of instructor. Community education and action as modes of intervention in rural communities. Cross-cultural perspectives of rural health development. *Three seminar hours a week, fall.* Hatch.
- HBHE 120 Promoting Health in a College Setting (3).** Lectures and seminars on planning, implementing and evaluating health education programs in a college setting with an emphasis on health promotion and wellness. *Two lecture, two seminar hours per week.* Staff.
- HBHE 121 Health Promotion Practicum (3)** Prerequisite, HBHE 120. This field placement in the Student Health Service will provide an opportunity to implement skills learned in HBHE 120. *Nine laboratory hours a week.* Staff.
- HBHE 125 Injury as a Public Health Problem (MHCH 125) (3).** Pre- or co-requisite, EPID 160. This course considers the causes and consequences of traumatic injury within developmental, social and economic contexts and dilemmas in injury prevention. Injuries associated with transportation, violence and the home and occupational environments are included. *Three lectures per week, spring.* Runyan, Kotch.
- HBHE 130 Social and Behavior Science Foundations of Health Education (4).** Selected social and behavioral science theories and concepts that apply to the analysis of health related behavior and to the generation of intervention strategies. *Three lecture hours per week, 1 seminar hour, fall.* DeVellis.
- HBHE 133 Interpersonal and Group Relations (3).** Prerequisite, permission of instructor. An experimental study of human relations with emphasis on analysis of interpersonal and group interaction, the effective use of intervention in group problem solving, leadership styles and team building, inter-group cooperation and conflict. *Two lecture, two laboratory hours, spring.* Staff.
- HBHE 140 Problems in Health Education (1 or more).** Prerequisites to be arranged with the faculty in each individual case, depending upon the problem that is to be studied. A course for students of public health who wish to make an intensive study of some special problem in public health education. *Fall, spring, and summer.* Staff.
- HBHE 141**
- 142**
- HBHE 150 Group Dynamics & Discussion Group Leadership: Human Sexuality (4).** Permission of instructor. Prerequisites, HBHE 85 or graduate status. Interpersonal and group interaction, theory and practice. Design and application of training exercises. Focus on leadership in group dealing with human sexuality. Students lead discussions of small groups of students in HBHE 85 (Topics in Human Sexuality). *Fall, spring.* Staff.
- HBHE 160 Introduction to Women's Health and Health Education (WNST 161) (3).** Using a lecture-discussion format, this course provides an overview of women's health-specific interests as family and community members, as patients and as health professionals. Implication for health education practice as well as opportunities for future research will be emphasized. *Two lecture and two seminar hours per week, fall.* Earp.
- HBHE 171 Social Psychological Theories of Individual Health Behavior (3).** Selected social psychological theories and their relationship to health promotion, disease prevention and patient education. *Three lecture hours per week, fall.* DeVellis.

- HBHE 172 Principles and Practice of Patient Education (2-3).** Principles and practice of implementing, coordinating and evaluating patient education programs. *Two lecture hours per week (3 hour credit will be granted on the basis of a relevant research activity approved by instructor), spring.* Staff.
- HBHE 180 Mental Health Promotion: Social and Behavioral Change Approaches (3).** Critical review and evaluation of programs targeted at individuals, families, interpersonal networks, communities and larger social units which have the promotion of mental health as a goal. *Three hours per week, spring.* Thomas.
- HBHE 185 Topics in Worksite Health Promotion (PHNU 185) (3).** An overview of critical scientific, political, economic, behavioral and other issues as they affect planning, conduct and evaluation of health promotion/risk reduction programs at the worksite. *Spring.* Staff.
- HBHE 190 Psychosocial Aspects of Aging (3).** Psychosocial aspects of the aging process and of old age. Needs of the elderly and their reactions to agencies and programs for the aged. *Two lecture and two seminar hours per week, spring.* Mutran.
- HBHE 200 Special Studies in Behavior Change (1 or more).** Prerequisite, permission of instructor. HBHE 200-natural change process in health-related behavior; 201 HBHE 201-planned change; personal and non-personal methods. HBHE 202-203 program design and evaluation; HBHE 203-personal development and community action; HBHE 204-social class and culture variations in planned change. *Fall, spring and summer.* Staff.
- HBHE 208 Units of Practice I: Family and Kinship Systems. (3).** Permission of instructor. The relationship of family and kinship patterns to health behavior; implications for planned change. Staff.
- HBHE 209 Units of Practice II: Individual, Small Group and Network (1-3).** Corequisite, enrollment in HBHE 241, or permission of instructor. Behavior systems in the individual, small group, family and other styles for planned change in personal health-related behavior, interpersonal and non-personal methods. *Fall and spring.* Staff.
- HBHE 210 Units of Practice III: The Community (1-3).** Corequisite, enrollment in HBHE 241, or permission of instructor. The nature and delineation of communities as social systems; theories, principles and practices relevant to health-related community development process; the identification of formal and informal leadership and power structures, etc. *Two lecture and seminar hours per week, fall, spring and summer.* Eng.
- HBHE 211 Units of Practice IV: Social Policy and Large Populations (1-3).** Health education social policy roles and strategies. The nature and delineation of policy and large populations as units of health education practice; include field practicum. *One-three seminar, one-three laboratory hours per week, spring, alternate years.* Steckler, Dawson.
- HBHE 212 Citizen Participation in Community Health Decision Making (1-4).** Permission of instructor. Theories and concepts of citizen participation in community health settings; an historical review of mandated citizen participation; and strategies for enhancing citizens' ability to influence the social policy process. *One-three lecture hours; 0-two seminar hours per week, fall.* Steckler.

- HBHE 215** **Natural Change Determinants in Health-Related Behavior.** (3). Permission of instructor. An intergrated behavioral science approach to unplanned determinants of change in the health related behavior systems of the small individual, group, and community. *Fall.* Staff.
- HBHE 216** **Cultural, Health and Planned Change** (3) The relationship between effective planned health related behavioral and social change and cultural systems are explored. *Fall.* Whitehead.
- HBHE 222** **Professional Practice** (1 or 2). Corequisite, enrollment in HBHE 242 or permission of instructor. Studies in the professional role of the change agent and consultant with special reference to cross-cultural settings; the development of the professional and sources of innovation and practice. *Fall.* Dawson.
- 223**
- HBHE 230** **Public Policy and Health Promotion (HPAA 230)** (3). Policy/programs options and implementation strategies in the light of contemporary patterns of illness and the efficacy of modern health improvement interventions. *Spring.* Milio.
- HBHE 231** **Cross-Cultural Consultation** (3). Permission of instructor; corequisite, HBHE 243. The process and content of cross-cultural and international consultation in technical assistance to developing country health programs with special reference to planned social and behavioral change. *Fall.* Steuart.
- HBHE 232** **Health, Development and Technology** (3) Critical analysis of the theories in and approaches to adult learning, economic development, technology transfer, and primary health. The course includes a review of non-formal education and community organization techniques as tools for integrating health and development in the rural U.S. and in developing countries. *Fall.* Eng.
- HBHE 233** **Introduction to Program Management** (2). An introductory overview of health education program management. A practical study of personnel and financial management issues including: staff development, recruitment, performance appraisal, budget preparation and monitoring. *Six lecture hours per week, summer.* Dawson and House.
- HBHE 234** **Team Problem Solving** (1 or more). Prerequisites, HBHE 133 or permission of instructor. An experimental study of interpersonal relations in professional team settings; intra- and inter-team relationship process to large social systems with emphasis on intervention techniques. *Spring.* Staff.
- HBHE 235** **Instructional Materials and Development** (1-3), Permission of instructor. Independent projects in the design, production, validation and utilization of self-instructional training materials for use in college courses, in-service training programs, patient education, etc. Students may arrange for credit proportionate to the complexity of the individual projects. *Fall and spring.* Stritter, staff.
- 236**
- HBHE 240** **Community Diagnosis and Needs Assessment** (3). Co-requisite, HBHE 130. Purpose and methods for conducting community diagnosis, needs assessment and descriptive research in health education practice. Student teams work under field preceptors to apply these methods for subsequent problem formulation and evaluation. *Three lecture hours per week, fall..* (Field fee, \$450.00.) Staff.
- HBHE 241** **Program Intervention Design and Evaluation** (3). Pre-requisite, HBHE 240. Co-requisite HBHE 250. Introduction to social and behavioral change models for designing, evaluating, and institutionalizing health education interventions. Students work under faculty advisors to develop an intervention plan in partnership with client communities and agencies. *Three lecture hours per week, spring.* Cook and Eng.

- HBHE 242** **Program Intervention, Implementation and Monitoring I (2).** Prerequisite, HBHE 241, co-requisite, HBHE 251. Methods for executing health education intervention plans, including monitoring effectiveness and making appropriate modifications. Students work under faculty advisors to collaborate with local agencies and implement the plan of action developed in HBHE 241. *Six lecture hours per week, summer.* Cook and Eng.
- HBHE 243** **Program Intervention, Implementation and Monitoring II (2).** Pre-requisite HBHE 242, Co-requisite, HBHE 252. Application of methods to analyze and interpret data regarding the effectiveness of health education interventions. Students work under faculty advisors to assess the effectiveness of interventions implementation in HBHE 242. *Six lecture hours per week, summer.* Cook and Eng.
- HBHE 250** **Evaluation and Research Methods in Health Education (1-4).** Research and  
**251** evaluation methods of relevance to planned change in health-related behavior  
**252** and program planning. Research design will include quantitative and qualitative methods and will focus on application to public health practice. *One to 4 lecture hours per week, spring and summer.* Mutran and Goodman.
- HBHE 254** **Personnel Development (1-3),** Corequisite, enrollment in HBHE 234, or permis-  
**255** sion of instructor. The study of training and supervision as processes for per-  
 sonnel development in programs of planned change; training system strategies,  
 design, teaching styles, methods and evaluation; the personnel development  
 role in supervision, effects of organizational climate, etc. *Fall and summer.*  
 Staff.
- HBHE 310** **Doctoral Seminars in Health Education (1-3),** Prerequisite master's degree.  
**to** Permission of instructor for non-majors. A series of seminars designed to  
**317** explore the scientific foundations of health education and their implications  
 for health education practice. *Two to six seminar hours a week, fall, spring  
 and summer.* Staff.
- HBHE 340** **Advanced Field Training in Health Education (1-3).** Under guidance by faculty  
**341** and field counselors, students assume major responsibility for planning, exe-  
**342** cuting, and evaluating community health education projects. Open only to  
**343** doctoral students in the Department. Field fee \$125 per semester. *Fall and  
 spring.*
- HBHE 350** **Advanced Research in Health Education (2-9).** Permission of instructor.  
**351** Available only to students capable of pursuing independent research projects  
**352** under supervision. *Four to eighteen laboratory hours per week, fall, spring  
 and summer.* Staff.
- HBHE 392** **Master's Paper (1-6),** *Fall, spring and summer.* Staff.
- HBHE 394** **Doctoral Dissertation (3-9),** *Fall, spring and summer.* Staff.
- HBHE 400** **General Registration (0).**

## Department of Health Policy and Administration

- HPAA 75**     **Introduction to Health Services Systems** (3). Introduction to social, political, and economic rationale for, and patterns of, health services delivery at all levels of government: international, national, state, and local. *Fall*. Staff.
- HPAA 76**     **Introduction to Health Organization Structure and Functions** (3). Prerequisite senior standing. Basic concepts of organization structure and function and relevant administrative behavior as applied to the field of health and human services organizations. *Spring*. Files.
- HPAA 77**     **Budgeting and Control for Health Programs** (3). Basic methods and techniques of management and control of health programs, as well as resource development. *Spring*. Loddengaard, McLean, Porto.
- HPAA 83**     **Introduction to Human Resources Management** (3). Designed for undergraduates. Basic knowledge and skills in managing people in health organizations. *Spring*. Barry, Herzog, Jain, Simpson.
- HPAA 90**     **Field Training in Health Policy and Administration** (3). Supervised field experience in approved health agencies. Field fee \$200.00. *Fall, spring, summer*. Barry.
- HPAA 97**     **Readings in Health Policy and Administration** (3-6). For undergraduates enrolled in the Department's bachelor's degree program. Permission of instructor required. Directed readings or research; written reports are required. *Fall, spring, summer*. Staff.
- HPAA 99**     **Honors Research** (6-9). Prerequisites, overall GPA 3.3 by end of junior year in all UNC-CH courses, permission of Department chair. Readings and seminars for undergraduates who show potential and talent to do research. Students will carry out a special project and prepare an honors thesis based on the project. *Fall, spring, summer*. Barry.
- HPAA 101**    **Aging and Human Development (PHNU/HBHE/NUTR)** (3). Lectures concerned with biological, physical, emotional, demographic and social aspects of aging. Field trips to institutions, and home visits. Staff.
- HPAA 102**    **Determinants of Health: Biological, Physical and Social Factors** (1-3). Role of various biological, physical and social factors in health. The course will be taught in three autonomous modules. *Spring*. Rozier.
- HPAA 103**    **Information Sources in Health Policy and Administration** (1). Public health information sources and search strategies for identifying and accessing both printed and online resources. Includes literature of related fields, statistics sources, and other information centers beyond the Health Sciences Library. *Fall*. Allegri.
- HPAA 105**    **Concepts of Health Administration** (3). Survey of health and human services organization and management including concepts of administrative systems, government, legal and public interest aspects, organizational behavior and relations. *Spring*. Allen.
- HPAA 109**    **Concurrent Field Training in Health Policy and Administration** (1-3). Supervised observation of service activities in health service organizations. *Fall and spring*. Staff.

- HPAA 111 Orientation to Health Service Organizations (1-2).** Opportunities for those with limited exposure to health-related organizations to visit several operating agencies, as an approach to understanding the U.S. health system. Five field trips out of eight or nine arranged is required. Attendance is required at five seminars. Additional paper required for students receiving 2 credit hours. *Fall*. Chavious.
- HPAA 113 Hospital Organization and Administration (3).** Comprehensive overview of general hospitals, including organizational structure, governance, medical staff, external relationships, departmental organization, strategic planning, financing, regulation, accreditation, quality assessment. Addressed from perspective of chief executive officer. *Spring*. Files.
- HPAA 119 Community Health Planning and Evaluation (3).** Prerequisite, permission of instructor. Philosophical, conceptual, and methodological understanding of planning and its role in the society in relation to health and human services. *Fall, spring*. DesHarnais, Veney.
- HPAA 124 Some Quantitative Methods of Planning and Evaluation (BIOS 124) (3).** Planning cycle, methods overview, data sources, PERT, budgeting, health indices, measurement of goal fulfillment, achievement, efficiency, effectiveness, research designs, benefit cost analysis, probability, utility and decision trees. *Spring*. Coulter, staff.
- HPAA 126 Introduction to Population Policy (3).** Concepts of population policy in the context of social policy, policy implications of population dynamics, policy issues and alternatives, and studies in policy development processes. *Fall*. Freymann.
- HPAA 133 Issues in Health Care (1-2).** By means of presentations by national leaders in health care and of class discussions, problems and issues and changes in public policy in health care will be explored. *Fall*. Staff.
- HPAA 137 Theory and Practice of Public Health Policy and Administration (3).** Policy and management issues and ideals, including their historical derivations and international implications, in relation to current state and local practice. *Spring*. Staff.
- HPAA 140 Readings in Health Policy and Administration (1-6).** Staff.
- HPAA 147 Population Program Development and Administration (3).** Offers basic knowledge, methods and skills required to plan, implement, administer and evaluate fertility control programs. Utilizes discussions, readings, planning exercises, and a computer game. *Spring*. Staff.
- HPAA 150 A Basic Introduction to the Economics of Health Sciences (3).** Principles of applying economic analysis to the health sector. *Summer*. Kilpatrick, Rice.
- HPAA 151 Health Economics for Policy and Administration (3).** Prerequisite, ECON 100, 101, or equivalent, and permission of instructor. Application of health economic techniques to the problems of policy analysis and administration. *Spring*. Freund, Rice.
- HPAA 156 Strategies for Prevention (3).** Effects of public policies on rates of illness, injury, and premature death. Advantages and disadvantages of various approaches to prevention, especially regulation and health promotion. *Fall*. Barry.

- HPAA 158 Ethical Issues in Medicine and Health (3).** Nature of ethical thought and reasoning; contributions of religion and science; historical and current issues. Sections on professional practice issues and health policy issues. *Spring*. Allen, Beauchamp.
- HPAA 165 Women in Management (3).** Analysis of current status of women in management in corporate health and governmental settings in the U.S. Contributions of social sciences to understanding problems in women achieving full equality with male managers. *Fall and spring*. Allen, Barry.
- HPAA 167 Introduction to Dental Public Health: Basic Knowledge and Skills (3).** Survey of the theory and practice of dental public health, epidemiology and natural history of dental disease, dental indices, methods of prevention and control on population groups. *Fall, spring*. Rozier, Bader, Graves.
- HPAA 174 Geriatric Health and Medical Care (3).** Presents a comprehensive survey of geriatric health and medical care from both a clinical and policy perspective. *Spring*. Weissert.
- HPAA 176 Long Term Care Administration I (3).** Introduction to administration of long-term care facilities. Evolution of long-term care, survey of the current field. Examination of state and national requirements. *Spring*. Allen.
- HPAA 177 Long Term Care Administration II (3).** Prerequisite HPAA 176. Advanced study of the administrative aspects of managing long term care facilities. *Fall*. Allen.
- HPAA 180 International Organizations in Health and Population (2).** Permission of instructor required. Roles, problems, opportunities for different kinds of international organizations in health and population fields. Reference to general development context, organizational relationships, various subject areas, and methods of co-operation and assistance. *Spring*. Freymann.
- HPAA 182 Health Services Information and Control Systems (3).** Prerequisite, HPAA 211 or equivalent and permission of instructor. The course covers conceptual and practical aspects in the analysis, development, and utilization of computer-based information and control systems with emphasis on application to the health care environment. The course will stress the successful information system primarily as a function of understanding and satisfying the needs of the organization. Secondary emphasis will be on the influence of computer technology. Database and communications systems will also be emphasized. *Spring*. Parker, Schreiner.
- HPAA 183 Management of Human Resources in Health Organizations (3).** Permission of the instructor required for nonmajors. Basic knowledge and skills in managing people in health organizations: philosophy, productivity, assessment, managerial skills, and support systems. *Fall, spring*. Herzog, Jain, Simpson, Barry.
- HPAA 188 Health Law (3).** Prerequisite, permission of instructor. Familiarization with the nature, perspective, and objects of the legal process. Provides skills in understanding legal terminology, legal reasoning, and the tools of law, particularly for application to health care management and in making health policy decisions. *Fall, spring*. Wing, Carey.
- HPAA 189 Development of Personal Effectiveness (3).** Prerequisite, permission of the instructor. This course encourages the development of rational thinking through understanding the relationship between thinking and feeling using a peer coun-

- seling approach. Topics include self-appreciation, assuming responsibility, assertiveness, relationships, sexism, racism, goal setting, and leadership. *Fall, spring.* Barry.
- HPAA 190 Legal Problems in Health Facility Administration (2).** Prerequisite, HPAA 188 or permission of instructor. Seminar for interdisciplinary study of legal problems in administration of hospitals other health care facilities, including liability, labor-employee relations, etc. *Spring.* Gilbert.
- HPAA 191 Marketing For Not-For-Profit Organizations (3)** Prerequisite, permission of the instructor. Application of basic principles of marketing and marketing decision models to problems in health care and other not-for-profit organizations. *Spring.* Parker.
- HPAA 195 Implementing and Managing Change in Health Organizations (3).** Prerequisite, permission of instructor. Alternative strategies of implementing and managing change within health organizations. Analytical models from systems approach, interpersonal dynamics, policies. Case discussions, exercises, student participation. *Fall, spring.* Herzog, Simpson.
- HPAA 199 Computers in Health Administration (3).** Permission required for nonmajors. The course will provide students with an understanding of the capabilities and limitations of computers in the health field. Primary emphasis on micro-computers with sections devoted to larger systems. *Fall, spring.* Luckey.
- HPAA 200 Quantitative and Analytical Methods for Health Policy and Administration (3).** Prerequisite, permission of instructor. Introduction to process of decision modeling, emphasizing formulation and application and computation of basic management science models in health administration. Includes inventory theory, cost benefit analysis and linear programming. *Spring.* Parker, Kilpatrick.
- HPAA 201 Research Methods in Health and Health Services (3).** Prerequisites, BIOS and passing qualifying mathematics examination in HPAA. Examination of available methodology in terms of its application to researchable problems in health administration. Provides directed supervision of students carrying out empirical research. *Fall.* Luckey.
- HPAA 202 Issues in Health Policy and Administration (1-6).** *Fall, spring.* Staff.
- HPAA 203 Introduction to Health Services Research (3).** Open to MPH students only. Prerequisite, permission of instructor. Provides systematic introduction to selected methods for health services research, health services research literature, and research writing. A field/library research based paper is required. *Fall, spring.*
- HPAA 204 Policy for Alcohol and Other Drugs (3).** Examinations of the issues in formulating and implementing policy for drug problems, including alcohol. Conceptual frameworks for understanding the etiology of drug problems and intervention strategies. *Fall.* Beauchamp.
- HPAA 206 Field Work in Health Policy and Administration (1 or more).** This course provides an opportunity for supervised field operation and experience in approved health agencies. Field fee, \$450.00. *Spring, summer.* Herzog.
- HPAA 207 Evolution, Organization and Financing of Health Systems (3).** Societal, technological and professional forces in the evolution of health systems, current organizational and financing pattern, and various emerging issues. *Fall, spring.* DesHarnais.

- HPAA 208 Health Policy and Politics (3).** This course addresses the analytic and action roles in health policy for health administrators and more specialized policy positions. The course addresses recent formative trends in public policy as well as substantive health policy issues. Attention is given to the dynamics and strategies of the public policy process including: the spectrum of actors and structures; the process by which health problems are defined as issues, the policy formulation and implementation processes, regulatory policy making, and the legal bases and practical constraints of law in health policy formulation and implementation. *Spring.* Beauchamp.
- HPAA 210 Health Administration and Planning (3).** Prerequisite, permission of instructor. Concepts and methods of policy and program planning and implementation in health services, oriented to systems models of management. *Fall, spring.* Simpson, Veney.
- HPAA 211 Fundamentals of Health Financial Management (3).** Prerequisite, permission of instructor. Comprehensive examination of financial management concepts and practices in health service organizations, including costing, budgeting, financial analysis and control. *Fall, spring.* Zelman, McLean.
- HPAA 213 Organization and Administration of Multihospital Systems (3).** Prerequisite, HPAA 113 or permission of instructor. Legal, financial, and organizational issues of multihospital systems development and management, including issues of corporate reorganizations, strategic planning, and marketing. Prototypes and operating examples will be considered. Will include guest speakers. *Fall.* Files.
- HPAA 217 Health Program Evaluation (3).** Prerequisite, HPAA 210 or 147 and permission of instructor. Concepts and methods of the program evaluation paradigm as applied in health administration; experiential learning of evaluation planning, design and implementation. *Spring.* Veney, Simpson.
- HPAA 218 Planning Family Health Programs PHNU 218, (MHCH 218) (3).** Permission required for nonmajors. Basic models and methods of program planning. Emphasis on application of methods through the development of program plans for significant family health problems. *Spring.* Peoples-Sheps.
- HPAA 226 Health Care Quality and Utilization Control Systems (3).** Evolution and current status of health care quality assurance systems and programs for utilization control. Includes discussion of alternative quality assurance methods; PSRO's: hospital accreditation; hospital and ambulatory care utilization studies. *Spring.* Staff.
- HPAA 227 Ambulatory Care and Related Services (3).** Prerequisite, HPAA 207 or permission of instructor. Review of experience, current status, trends, and public policy relating to ambulatory health care and such related services as home care, day care, screening, and mental health screening. *Spring.* Staff.
- HPAA 228 Oral Epidemiology for Health Policy and Administration (3).** Prerequisites HPAA 167 and EPID 160. Permission of instructor required. Focuses on the epidemiology of oral disease and the implications and uses of this knowledge for dental health policy making and administration of dental programs. *Spring.* Rozier, Graves.
- HPAA 230 Public Policy and Health Promotion (HEED 230) (3).** Policy/program options and implementation strategies in the light of contemporary patterns of illness and the efficacy of modern health improvement interventions. *Spring.* Milio.

- HPAA 240** **Epidemiology of Alcohol Use and Abuse (EPID 240)** (3). Prerequisite EPID 160. Course will examine patterns of alcohol use and abuse nationally, internationally, and ethnically. Problems of definition, measurement and methodology will also be considered; as well as implications for health. *Two lecture, two seminar hours per week, spring.* Magruder-Habib.
- HPAA 250** **Health Policy and Aging (EPID 175)** (3). Critical examination of aging policy in light of empirical findings on the elderly's economic power, utilization patterns, prevalence of dependency, and the cost-effectiveness of policy options, including long-term care. *Fall.* Weissert.
- HPAA 253** **Operations Research and the Health System** (3). Prerequisite, permission of instructor. Analysis of deterministic and stochastic models and their applicability to health services research. Formulation of decision models for health care decision problems, involving mathematical programming, queueing and heuristics. *Fall.* Parker, Kilpatrick, Veney.
- HPAA 255** **Ethical and Philosophical Issues in Health Policy** (3). Prerequisites, HPAA 208 and permission of instructor. This course deals with the many philosophical and ethical issues in health policy analysis like moralism versus paternalism, equity versus equality, and rationing health care. *Fall.* Beauchamp.
- HPAA 263** **Dental Public Health Practice** (3). Dental care in the comprehensive health services setting, financing and payment, social and behavioral science applications, emerging role of auxiliary personnel, prevention and health education, organization and care delivery, professional regulation and accountability, role of health department and community dentistry in the academic setting. *Spring.* Rozier, Graves, Weintraub.
- HPAA 266** **United States Health Policy (MHCH 266)** (2-3). Examination of policy issues pertaining to delivery of health services in the U.S. Evolution and current developments are examined in an effort to evaluate the administrative implications of current and proposed systems of health delivery in the U.S., *Fall, spring.* Miller.
- HPAA 270** **Advanced Methods in Policy Analysis** (3). Prerequisite, permission of instructor. Economic and quantitative methods of policy analysis and application to the health field. Students required to do a project. *Fall.* Rice.
- HPAA 275** **Advanced Quantitative Methods** (3). Prerequisite, HPAA 253 or permission of instructor. Analysis and application of advanced management science models to health and public sector problems. Emphasis is given to advanced forms of mathematical programming, networks, decision theory, and queueing. *Spring.* Kilpatrick, Parker, Veney.
- HPAA 282** **International and Comparative Health Administration** (3). Permission of instructor required. Study of various health problems and responsive program systems in different (more or less developed) countries with a comparative framework, examining special experiences, general lessons, and possibilities for cooperation. *Fall.* Freymann, Jain.
- HPAA 283** **Management Accounting for Health Care Organizations** (3). Prerequisite HPAA 211 or permission. This course focuses upon the concept of "cost" and the utilization of cost information in decision-making in health care organizations. Material is conveyed through lectures, problems, and cases. *Spring.* Zelman.

- HPAA 285 Financial Management of Health Care Organizations.** (3) Prerequisite HPAA 211. A detailed examination of financial management techniques in health care organizations to include capital financing, capital structures, and investment decisions. *Fall.* McLean.
- HPAA 290 Analytic Techniques in Health Policy & Administration** (3). Prerequisites, BIOS 105 and permission of the instructor. Covers a variety of analytic techniques and methodologies basic to more advanced analysis of decision problems in health administration, i.e., multivariate statistics, basic econometrics, linear algebra. *Fall.* Parker, Kilpatrick, Veney.
- HPAA 296 Organizational Design and Behavior of Health Institutions** (3). Review of theory and empirical findings providing approach to management and organizational behavior. Topics include effect of technology and size on organizational structure, performance, roles of professionals. *Fall.* Kaluzny.
- HPAA 300 Doctoral Seminar in Health Policy and Administration I** (3). Prerequisite, doctoral standing. Readings and discussion of various aspects of health services. Special emphasis is given to the inter-relationships of administrative and organizational theory to selected health service topics. *Fall.* Weissert, staff.
- HPAA 301 Doctoral Seminar in Health Policy and Administration II** (3). Prerequisite, HPAA 300. Continuation of HPAA 300. *Spring.* DesHarnais.
- HPAA 304 Seminar in Teaching of Health Policy and Administration** (3). Problems and processes of teaching health administration, including supervised practicum experiences. *Fall, spring.* Staff.
- HPAA 311 Selected Topics in Health Financial Management** (3). Prerequisite, HPAA 211. The course discusses current topics in health care financial management. The topics change from semester to semester, but usually one topic is highlighted. Seminar style classes with considerable reading and discussion. *Fall, spring.* Zelman, McLean.
- HPAA 333 Advanced Methodology in Health Policy and Administration Research** (3). Prerequisites, BIOS 145 and HPAA 201, or permission of instructor. Research methodology as applied to understanding problems in health care delivery. Consideration is given to experimental design, data collection, and application of appropriate modes of analysis of data. *Spring.* Veney, Luckey, Sollecito.
- HPAA 334 Selected Topics in Health Policy and Administration: Advanced Seminar** (3). Prerequisite, permission of instructor. Integrative study of selected theory and research as it relates to the organization and delivery of health services. Separate seminars are developed to correspond to the doctoral student's specific interest and needs. *Spring.* Staff.
- HPAA 356 Current Issues in Health Policy and Mass Communications** (NURS 356) (2-3). Provides an analytic skill in a real world context for those who will participate in the broad process of policy formulation through their positions in the health professions and mass communications field. *Fall.* Milio.
- HPAA 373 Seminar in Health Policy and Administration** (1-6). *Spring.* Staff.
- HPAA 384 Advanced Studies in Population Policy** (3). Prerequisite, permission of instructor. Individualized studies on special problems in population policy analysis and development to provide skills in aspects of goal identification, analyzing relevant organizational processes. *Spring.* Freymann, Jain.

- HPAA 392 **Master's Paper** (0-3). *Fall, spring*. Files, Luckey.
- HPAA 393 **Master's Thesis** (1-6). Staff.
- HPAA 394 **Doctoral Dissertation** (0-9). Staff.
- HPAA 400 **General Registration** (0). Staff.

### Department of Maternal and Child Health

- MHCH 103 **Reproductive Physiology and Conception Control** (2). Human sexuality, reproductive physiology, methods of regulation; pregnancy, fetal wastage, infertility, sterilization, abortion and community responsibilities discussed. *Fall*. Hulka.
- MHCH 105 **Current Issues and Advances in Developmental Disabilities**. (SOWO 105) (3). Permission of instructor. Seminar that will enable students and experts in developmental disabilities to exchange ideas and explore controversial topics. Seminar will address current research and policies which affect service delivery for persons who have developmental disabilities. *Fall, spring*. Staff.
- MHCH 110 **Demography of Women and Children in Developing Countries** (2-3). Introduction to basic population concepts and measures, emphasizing demographic indicators of health and social status of women and children in developing countries. Permission required for all non-majors. *Spring*. Tsui.
- MHCH 125 **Injury as a Public Health Problem** (HBHE 125) (3). Pre- or co-requisite, EPID 160. This course considers the causes and consequences of traumatic injury within developmental, social and economic contexts and dilemmas in injury prevention. Injuries associated with transportation, violence and the home and occupational environments are included. *Three lectures per week, spring*. Runyan, Kotch.
- MHCH 140 **Problems in Maternal and Child Health** (1-3). Prerequisites to be arranged with the faculty in each individual case. *Fall, spring and summer*. Staff.  
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- MHCH 200 **Issues In Maternal and Child Health** (3). Permission required. For students outside the Department of Maternal and Child Health who desire a survey of current issues and programs in maternal and child health. Emphasis is on contemporary approaches to problems and services affecting children and families. *Two lecture, two seminar hours, fall*. Watkins.
- MHCH 201 **Child Development and Social Policy** (3). Permission of instructor required. Analysis of prevailing and social policies as they relate to principles of child development; overview of child development, and case studies on federal policies affecting children and families. *Spring*. Staff.
- MHCH 205 **International Family Planning** (3). Permission required. Prerequisites. Analysis of the family planning movement, its policies, operations, and research, with emphasis on The Third World. *Three lecture hours a week, fall, spring*. Tsui.
- MHCH 207 **Evaluation of Primary Health Care Services in the Developing World** (3). Permission required by instructor. Analysis of Third World health problems, alternate models for solving those problems and the policies of organizations involved in the delivery of primary health care. *Spring*. Bender.

- MHCH 208** **Concurrent Field Training in Maternal and Child Health (1-4).** For MHCH majors only. An elective faculty supervised field experience in community maternal and child health services in relation to background of experiences, special interests, and future professional plans. *Variable number of laboratory hours per week, fall, spring and summer.* Staff.
- MHCH 209** **Policy and Program Development in Maternal and Child Health (2).** Nonmajors require permission of instructor. Examination of the development of health services and other public programs for mothers and children in the context of broader policy considerations. *One lecture and two seminar hours per week, fall.* Kotch, Farel.
- MHCH 210** **Maternal and Infant Health and Family Planning (3).** Nonmajors require permission of instructor. Health needs, problems and programmatic issues in maternal-infant health and family planning. Includes biologic, sociocultural and psychological factors. *One lecture, two seminar hours, fall.* Siegel.
- MHCH 211** **Family and Child Health (2-3).** Permission of instructor required for nonmajors. This course addresses the major issues in child and adolescent health including interactions among children, their families and environment. Consideration is given to models of intervention with emphasis on the preventive public health approach. *One lecture and two seminar hours a week, spring.* Miller.
- MHCH 212** **Seminar on the Family (PHNU 212) (1).** Permission of instructor required. Family theory, research and assessment; family relationships and environments that influence adult and child health and development; professions and institutions that influence family functioning. *Two seminar hours a week, spring and summer.* Schaefer.
- MHCH 213** **Research Utilization in Maternal and Child Health (2).** Permission required. Emphasis is upon evaluating the research methodology used by others and applying that research to the assessment, planning and implementation of policies and programs in maternal and child health. *Two hours per week, spring.* Kotelchuck, Tsui.
- MHCH 214** **Field Training in Maternal and Child Health (2-8).** Required of selected students in terms of their background of experience, special interest, and future professional plans. An additional field fee of \$350.00 will be assessed. *Summer, 6-10 weeks.* Staff.
- MHCH 215** **Analysis of Developmental Intervention Programs (PHNU 215) (2).** Permission of instructor required. Critical review of intervention programs for infants and young children aimed at the prevention of developmental deficits. Examination of rationale for intervention, content, and form of program delivery and methods for evaluating effectiveness. *One lecture and two seminar hours per week, spring.* Staff.
- MHCH 217** **Developmental Indices of Health Status in Infants and Young Children (PHNU 217) (2).** Permission of instructor required. Concepts and methods in the early identification of developmentally at-risk populations. Examines issues in reliability, validity and applicability of measurements used in the assessment of early cognitive and social development. *One lecture and two seminar hours per week, spring.* Staff.
- MHCH 218** **Planning Family Health Programs (PHNU 218, HPA 218) (3).** Permission required for nonmajors. Basic models and methods of program planning. Emphasis on application of methods through the development of program plans for significant family health problems. *Three lecture hours, spring.* Peoples-Sheps.

- MHCH 220** **Services for Handicapped Children** (3). This course focuses on the design, organization, and implementation of services for children with special needs. Participants will analyze the range of services needed by these children. *Spring*. Farel.
- MHCH 222** **Family Planning Theory: Assessment and Care of Women in the Reproductive Years** (PHNU 222) (1). For health professionals doing family planning counseling. Includes modes of action, effectiveness, contraindications, side effects, complications, advantages, disadvantages of temporary and permanent methods of birth control. *On request, spring*. Staff.
- MHCH 224** **School Age Population: Health Problems and Programs** (PHNU 224) (3). Permission of instructor required. Health needs and problems of school aged population. Development and evaluation of programs to meet these needs including examination of legislative mandates, administrative structures, and manpower utilization. *Spring*. Asay.
- MHCH 225** **Practicum: Leadership in School Health Programs** (PHNU 225) (1-4). Prerequisites, MHCH 224 or equivalent and permission of instructor. An elective, individually planned and supervised school-community based field experience. Designed to provide leadership experiences in delivery of school health services. *Spring*. Asay.
- MHCH 254** **Social Work in Public Health** (2). Permission of instructor required. Analyzes role and functions of social workers in public health with emphasis on multi-disciplinary practice. Focus is on planning social work component of health program. Observational visits to selected sites. *Fall*. Watkins.
- MHCH 255** **Consultation in Public Health** (PHNU 255) (2-3). Permission required. Examination of the practice of case and program consultation in public health settings. Analysis of consultation as a mutual problem-solving process including evaluation. Roles and relationships of consultant and consultee are considered with provision for experiential learning opportunities. Emphasis is on multidisciplinary practice. *One and one half lecture hours per week. Field experience and written report accepted for additional credit hours. Fall and spring*. Watkins.
- MHCH 300** **Doctoral Seminar in Maternal and Child Health** (1-3) Doctoral seminar in maternal and child health. Advanced topics in Maternal and Child Health. Required of departmental doctoral students every semester until admitted to candidacy. *Fall, spring*. Staff.
- MHCH 307** **Seminar in Disorders of Development and Learning in Childhood** (PHYT 307) (2). Pre-requisite, permission of instructor. Seminar for students with prior background in child development or related areas on interdisciplinary diagnosis and management of developmental problems in childhood. Focus on staff and student prepared case material. *Two seminar hours a week, fall, spring and summer*. Knobloch; DDDL staff.
- MHCH 309** **Issues of Advocacy in Maternal and Child Health** (3). Permission of instructor required. Examines the advocacy as a process for influencing policies affecting mothers and children. *Spring*. Browne.
- MHCH 315** **Seminar in Maternal and Child Health** (2). Nonmajors require permission of instructor. This seminar provides an opportunity for students and faculty to explore in greater depth selected subjects within the field of maternal and child health. *Four seminar hours a week, summer*. Staff.

- MHCH 320 Seminar in Programs to Affect Human Reproduction (2).** Application of health services research and behavioral, biological, epidemiological, and clinical studies in human reproduction to the design of programs to effect patterns of reproduction and reproductive outcomes. *Four seminar hours a week, fall.* Udry.
- MHCH 321 Seminar in Programs to Affect Child Care and Development (2).** Analysis of programmatic research and behavioral and biological studies in child care and development; its contribution to the design and to the research and evaluation of programs affecting child care and development. *Four seminar hours a week, spring.* Schaefer, Siegel.
- MHCH 322 Human Sexual Behavior (3).** Permission of instructor required. Scientific foundation for understanding human sexual behavior. Including biological, psychological and sociological perspectives. Research emphasis. Udry.
- MHCH 392 Master's Paper (1).** *Fall, spring, or summer.*
- MHCH 393 Master's Thesis (3-6).** *Fall and spring.*
- MHCH 394 Doctoral Dissertation (3 or more).** *Fall and spring.*
- MHCH 400 General Registration (0).**

#### Department of Nutrition

- NUTR 50 Introduction to Human Nutrition (3).** Presented as an integrated body of knowledge derived from several disciplines. Functions and sources of man's food. Nutrient requirements and their relation to health and disease. The relevance of nutrition to individual well being, social welfare, and economic development. *Fall.* Anderson.
- NUTR 98 Undergraduate Research in Nutrition (3).** For undergraduates enrolled in the department's bachelor degree program. Permission required from faculty research director. Directed readings or laboratory study on a selected topic. May be taken more than once for credit. Staff.
- NUTR 99 Honors Research in Nutrition (3).** Permission required from faculty research director. Directed readings or laboratory study on a selected topic. Requires a written proposal to be submitted to and approved by BSPH Committee and faculty research director. A written report is required. May be taken more than once for credit. *Six laboratory hours per week, fall, spring, summer.* Staff.
- NUTR 100 Nutrition and Human Health (3).** Prerequisite, EPID 160. A review of the physiological and environmental determinants of human nutritional requirements and the relation of diet to human health and disease. *Fall.* Anderson, staff.
- NUTR 101 Aging and Human Development (PHNU/HPAA/HEED) (3).** Lectures concerned with biological, physical, emotional, demographic and social aspects of aging. Field trips to institutions, and home visits. *Spring.* Staff.
- NUTR 110 Applied Nutrition for Health Professions (3).** Prerequisites, previous or concurrent courses in chemistry, biochemistry, and physiology/anatomy at undergraduate or graduate level. Knowledge and understanding of nutrition and application to the preventative and therapeutic care of man in a health-team approach. *Spring.* Anderson, staff.

- NUTR 120 Nutrition Education For Teachers (3)** Prerequisites, teacher certification and permission of instructor. Review of basic nutrition information, materials, and techniques which provide a framework for integrating nutrition education into various subject areas of existing school curriculum in grades K-12. *15 hours per week for 3 weeks, spring.* Farthing.
- NUTR 140 Readings in Nutrition (1-6).** Prerequisite, permission of instructor. Reading and tutorial guidance in special areas of nutrition such as international nutrition and nutrition and population. *Fall, spring, and summer.* Staff.
- NUTR 150 Cell Biology (4).** Prerequisites, a course each in biochemistry and physiology or permission of instructor. A review of the general structure and function of the cell. Chemistry and metabolism of carbohydrates, proteins, lipids, vitamins and minerals. Endocrine and nervous integration of cellular mechanisms. *Fall.* Switzer, Anderson, Switzer.
- NUTR 151 Cell Biology Laboratory (3).** Prerequisites, two chemistry laboratory courses and concurrent registration in NUTR 150. A laboratory course designed to acquaint students with the equipment and theory of modern biochemical and biophysical methods used in nutrition research. *Six laboratory hours per week, fall.* Switzer, Anderson.
- NUTR 152 Meal Planning, Food Selection and Preparation (3).** Prerequisite, NUTR 50 or equivalent. Introduction to foods important in the American diet; composition and properties; factors affecting the selection, handling and preparation of foods; menu planning and meal preparation. A laboratory is included. *Three lecture hours per week, fall.* Barrett.
- NUTR 153 Food Production, Processing and Packaging (3).** Prerequisite, NUTR 50 or equivalent. Impact of all parts of food industry on availability and nutritive value of foods, and food safety. *Spring.* Staff.
- NUTR 154 Human Nutrition (3).** Prerequisites, NUTR 50, BIOC 100, BIOL 45 or permission of instructor. A second level course in human nutrition which deals with nutrient requirements in relation to specific cellular needs and mechanisms. Structural and metabolic aspects of carbohydrates, lipids, proteins, vitamins and minerals. *Fall.* Staff.
- NUTR 155 Introduction to Public Health Nutrition (3).** Prerequisite, NUTR 50 or equivalent. The functions of the nutritionist in the community, including an assessment of nutritional needs of individuals, with emphasis on interviewing and counseling skills. Existing community food and nutrition programs and services are introduced and their relationship to other health and social programs is studied. *Fall.* Haines.
- NUTR 156 Food Service Management (3).** Basic concepts of food service system management applied to small and medium-sized group and health care facilities in the community. *Two lecture and laboratory hours per week, fall, spring.* Chegash.
- NUTR 157 Clinical Nutrition (3).** Prerequisites BIOL 45, BIOC 100, and corequisite NUTR 154 or equivalent courses. A study of the relationship of diet to diseases of man and of dietary intervention in the prevention and/or treatment of these conditions. *Spring.* Staff.
- NUTR 157L Clinical Nutrition Laboratory (1).** Corequisite NUTR 157. Development of clinical nutrition skills. Application of clinical nutrition principles and development of interviewing assessment and counseling skills. *Two laboratory hours per week, spring.* Barrett.

- NUTR 159 Food Habits (3).** Social, cultural, and psychological influences on food consumption patterns of individuals. Includes a study of selected research methodologies and alternate U.S. food consumption patterns. *Spring*. Kirkley.
- NUTR 160 Economics of Nutrition and Public Health (3).** Prerequisite, two social science courses. Concepts and methodologies used by economists in examining health and nutritional issues at the microeconomic level. Emphasis will be on examining how economics can be used to understand the determinants and consequences of health/nutritional status and a few key aspects of health and nutritional behavior. *Spring*. Popkin.
- NUTR 200 Maternal, Infant and Child Nutrition (3).** Prerequisite, NUTR 154 or permission of instructor. This course covers the nutritional needs of women during the childbearing years, infants and children; the community, ethnic and socioeconomic influences on food intake of these target populations, and community food and nutrition programs designed to meet their unique nutritional needs. *Two lecture and two seminar hours per week, fall*. Farthing.
- NUTR 201 Nutrition of Adults and the Elderly (3).** Prerequisite, NUTR 154 or equivalent or permission of instructor. A review of the effects of the aging process on human nutrition. Physiological, psychological and sociological factors which affect dietary habits and nutrient intake will be examined. *Spring*. Edozien.
- NUTR 202 Advanced Human Nutrition (3).** Prerequisite, NUTR 154. A review of the epidemiology, pathology and prevention of disorders related to diet and nutrition. *Spring*. Anderson, staff.
- NUTR 205 Principles of Public Health Nutrition (4).** Prerequisite, NUTR 155 or equivalent. Roles and functions of the nutritionist in community health. Emphasis is on understanding the role and function of the health agency and the nutritionist in community assessment to identify major needs for nutrition programs and services. *Two lecture hours and one day concurrent field experience per week, fall*. Kaufman.
- NUTR 207 Nutrition Education (3).** Prerequisite, NUTR 50 or equivalent or permission of instructor. Principles and practice of nutrition education with emphasis on the community setting for small groups and individuals. Use of modern techniques, including written and audiovisual instruments, geared to modification of dietary behavior and to prevention of disease. *Spring*. Farthing.
- NUTR 208 Nutrition Programs and Services (4).** Prerequisite, NUTR 205, An overview of the planning and management of local, state and federal public health nutrition programs covering their legislative and administrative structures and responsibilities of the nutritionist. *Four seminar hours and concurrent field experience per week, spring*. Kaufman.
- NUTR 212 Nutritional Assessment (3).** Prerequisites, NUTR 154 and laboratory experience in chemistry or nutrition science. This course develops the theory and rationale of nutritional assessment of individuals and communities with various techniques including clinical, anthropometric, dietary and laboratory methods. Emphasis is given to experimental design. *One lecture and four laboratory hours per week, spring*. Switzer, staff.
- NUTR 215 Nutrition in the Third World (3).** Critical review of the dimensions of world problems in nutrition, with emphasis on the micro and macro determinants of malnutrition, the consequences of malnutrition, and the programs and policies for eliminating malnutrition. *Three lecture hours per week, fall*. Popkin.

- NUTR 240** **Problems in Nutrition** (1-6). Prerequisites, permission of instructor. A course for students who wish to make a study of some special problem in nutrition. Lectures, seminars and/or laboratory work according to the special area under study. *Fall, spring, and summer.* Staff.
- NUTR 250** **Clinical Nutrition Practice** (0-6). Prerequisites, NUTR 152, 157, 157L or equivalent. Students are assigned to a medical facility where, under supervision of registered dietitians, they participate in nutritional care of patients. Field fee of \$450. *Forty hours per week for twelve weeks, summer.* Barrett and field preceptors.
- NUTR 251** **Field Experience II** (1-4). Students are assigned to a state, local or district health agency or other appropriate agency for supervised field experience. Field fee required. A brief written report of activities is required. *Fall, spring, and summer.* Kaufman, staff and field preceptors.
- NUTR 252** **National Nutrition Issues** (1). Prerequisite NUTR 208 or permission of instructor. Three-day indepth seminars held in Washington, D.C. on current national nutrition issues, policy formulation and program development with key congressional staff, federal agencies staff and pertinent public interest/consumer advocacy groups. Paper required. Field fee \$50. *First summer session.* Kaufman.
- NUTR 300** **Nutritional Aspects of Protein, Lipid and Carbohydrate Metabolism** (3). Prerequisites, NUTR 150 and 154. Recent advances in the nutritional aspects of protein, lipid, and carbohydrate metabolism will be reviewed. *Six seminar hours per week, fall.* Switzer.
- NUTR 301** **Nutrition Aspects of Mineral Metabolism** (3). Prerequisites, NUTR 150 and 154; 201 or 202 or 212. Recent advances in the nutritional aspects of mineral metabolism will be reviewed. *Six seminar hours per week, spring.* Anderson.
- NUTR 302** **Nutritional Biochemistry** (3). Prerequisites, NUTR 151 and 212. Research procedures in nutritional biochemistry and physiology, including the identification and measurement of nutrients and their metabolites in foods and in human and animal tissues and body fluids. *Three laboratory hours per week, fall.* Staff.
- NUTR 303** **Advanced Seminar in Public Health Nutrition** (3). Prerequisites, NUTR 205; NUTR 208 or 215. The broad aspects of public health issues, such as U.S. and international nutrition problems and issues, intervention options, and policy decisions—basis and rationale—will be discussed. *Six seminar hours per week, spring.* Haines.
- NUTR 304** **Advanced Seminar in Nutrition Behavior** (3). Prerequisites, NUTR 159 and 207 or permission of instructor. Analysis of the ways anthropological, economic and psychological approaches can be used to understand nutrition behavior and to effect nutrition change. *Six seminar hours per week, fall.* Kirkley.
- NUTR 340** **Seminar in Nutrition** (1-6). Prerequisites, a minimum of one year of graduate work in nutrition and permission of instructor. Seminars and/or laboratory work, according to the special area under study. *Fall, spring and summer.* Staff.
- NUTR 355** **Nutrition Research Methodologies** (3). Prerequisites, NUTR 205 and 208 or permission of instructor. Development of skills, techniques and competencies, through practical experience, in the assessment of the nutritional needs of a community, or in the planning and delivery of community nutrition services in a health or other appropriate agency or the evaluation of an ongoing nutrition program. *Six laboratory hours per week, fall, spring and summer.* Staff.

- NUTR 389 Preparation of Research Prospectus (1).** Theoretical and practical aspects of selecting a research topic and designing and preparing the research proposal. *Two seminar hours, fall and spring.* Popkin.
- NUTR 390 Nutrition Research (1-9).** Individual arrangements will be made by the student to spend part or all of his time in supervised investigation related to thesis or dissertation. *Fall, spring and summer.* Staff.
- NUTR 391 Nutrition Research Seminar (1).** Instruction in preparing seminars. Students will also attend and learn to critique nutrition faculty seminars. *Fall and spring.* Popkin.
- NUTR 392 Master's Paper (1-6).** *Fall, spring and summer.* Staff.
- NUTR 393 Master's Thesis (0-6).** *Fall, spring and summer.* Staff.
- NUTR 394 Doctoral Dissertation (0-9).** *Fall, spring and summer.* Staff.
- NUTR 400 General Registration (0).**

#### **Department of Parasitology and Laboratory Practice**

- PALP 131 Parasitism and Human Disease (3).** An overview of the principles of infectious disease. Lectures and discussions will introduce all aspects of microbiology, as well as other topics, including immunity, pathogenesis, biosafety, and molecular biology. *One lecture and two laboratory hours a week, fall.* Goulson.
- PALP 134 Medical Helminthology (2).** Permission of instructor required. Lectures and discussions on the helminth parasites of man with special emphasis on their life cycles, host responses, and epidemiology. *Two lecture hours a week, fall.* Hall.
- PALP 134L Medical Helminthology Laboratory (2).** Prerequisites, PALP 134 and permission of instructor. Lectures, discussions, and laboratory exercises dealing with the biology, host-parasite relations, and diagnosis of helminthic infections of man. *Four laboratory hours a week, fall.* Staff.
- PALP 135 Medical Protozoology (2).** Permission of instructor required. Lectures and discussions on the protozoal parasites of man, with special emphasis on their life cycles, host responses, and epidemiology. *Two lecture hours a week, spring.* Merritt.
- PALP 135L Medical Protozoology Laboratory (2).** Prerequisites, PALP 135 and permission of instructor. Lectures, discussions, and laboratory exercises dealing with the biology, host-parasite relations and diagnosis of protozoal infections of man. *Four laboratory hours a week, spring.* Staff.
- PALP 138 Host-Parasite Metabolic Interactions (3).** Prerequisites, permission of instructor. Metabolic interactions between host and parasite in medically important protozoan and helminthic infections will be discussed. How these interactions contribute to the pathogenesis of the diseases will be considered. *Three lecture hours a week, fall.* Hall.
- PALP 139 Molecular Biology of Parasites (3).** Prerequisites, PALP 135 or permission of instructor. A comprehensive introduction to the medically important human parasites. Methodological approaches to the study of gene structure and function in the parasitic protozoa will be emphasized. *Three lecture hours a week, spring.* Merritt.

- PALP 140** **Problems in Parasitology** (1 or more). A course for students who wish to make an intensive study of some special problems in human parasitology. *Two or more hours a week, fall and spring.* Staff.
- PALP 141**
- PALP 142** **Problems in Public Health Laboratory Practice** (1 or more). A course for students who wish to make an intensive study of some special problem in the laboratory field. *Two or more hours a week, fall and spring.* Staff.
- PALP 143**
- PALP 150** **Public Health Bacteriology** (4). Prerequisite, permission of the instructor. Lectures and laboratory studies of the human pathogenic bacteria and fungi with particular emphasis on those submitted to public health laboratories for complete identification. *One lecture and four laboratory hours a week, spring.* Stamm.
- PALP 151** **Public Health Virology** (3). Discussions focusing on the basic strategies of virus structure and replication with particular emphasis on the mechanisms for virus pathogenesis, prevention and diagnosis. *Three lecture hours a week, spring.* Baric.
- PALP 161** **Survey of Health Laboratory Management Issues** (2). A broad-based coverage of current and critical issues in the management of health laboratories. Topics will include human and physical resources, fiscal considerations and the impact of technological innovations. *Two lecture hours a week, spring.* Schoenfeld and Cavanaugh.
- PALP 192** **Medical Mycology** (4). Prerequisite, permission of instructor. Isolation, identification, epidemiology, mycoserology, and clinical importance of medically significant fungi. Identification of hyphomycetes and yeasts will be stressed. *Two lecture and four laboratory hours a week, fall.* Staff.
- PALP 230** **The Nature of Parasitism** (3). Prerequisite, permission of instructor. A course consisting of lectures and discussions on the immunobiology of parasitic protozoa and helminths. Host and parasite factors thought to be important in pathogenesis are presented. Medically important protozoa and helminths are stressed. *Three lecture hours a week, spring.* Seed.
- PALP 231** **Ecology of Parasitic Disease** (3). Prerequisites BIOS 105, PALP 134 or equivalent. Introduction to the measurement and analysis of the dynamics of parasite infection in populations of animal hosts. *Two lecture and two seminar hours a week, spring.* Riggs.
- PALP 233** **Malariaology** (3). Prerequisites, permission of instructor. Lectures, demonstrations, and laboratory devoted to the study of malaria in man and mosquito. The biology and classification of mosquitos are also considered. *Two lecture and two laboratory hours a week, fall.* Staff.
- PALP 235** **Problems in Public Helath Laboratory Methodology** (1 or more). Prerequisites, PALP 142 or 143, and permission of the instructor. *Two or more hours a week, fall and spring.* Goulson.
- PALP 236**
- PALP 250** **Public Health Laboratory Methods I** (2). Prerequisite, permission of the instructor. Lectures and seminars pertaining to current diagnostic techniques in Public Health Bacteriology and Mycology. *One lecture and two seminar hours a week, fall.* Staff.
- PALP 251** **Public Health Laboratory Methods II** (3). Prerequisites, permission of the instructor. Lectures and demonstrations on the principles and techniques of immunodiagnostics will be covered. New techniques and data analysis will be stressed. *Three lecture hours a week, spring.* O'Connell.

- PALP 260 Public Health Laboratory Management I (3).** Prerequisites, permission of instructor. An exploration of the functions of public health laboratory directors. Topics include budgeting, planning, organizing, personnel management, and physical requirements of laboratory operations. *Two lecture and two seminar hours a week, fall.* Schoenfeld, Cavanaugh.
- PALP 261 Public Health Laboratory Management II (3).** Prerequisites, permission of the instructor. A continuing study in depth of the responsibilities and activities of the public health laboratory. *Two lecture and two seminar hours per week, spring.* Schoenfeld, Cavanaugh.
- PALP 270 Biohazard Science I (3).** Prerequisite, permission of the instructor. Philosophy of safety, laboratory-acquired and nosocomial infections, other biohazards, fundamentals of laboratory safety, and principles of disinfections and sterilization. *Fall.* Tulis.
- PALP 271 Biohazard Science II (3).** Prerequisite, PALP 270. Lectures and demonstrations on biohazard containment systems, aerosol and surface sampling, filtration technology, hazards of animal experimentation, carcinogen research, oncogenic virus studies, recombinant DNA, and aspects of biohazard control. *Spring.* Tulis.
- PALP 275 Laboratory Methods in Biohazard Science (3).** Prerequisites, PALP 270 and 271. Fundamentals of disinfection and sterilization processes including official methodology, packaging, dosimetry, inactivation kinetics, process control, sterility testing, and use of containment facilities and aerosol and surface sampling equipment. *Three lecture and ten laboratory hours per week, summer.* Tulis.
- PALP 276 Advanced Studies in Biohazard Science (3).** Prerequisites, PALP 270, 271, and permission of instructor. Lectures and seminars concerned with biohazard risk assessment, medical surveillance, impact of state and federal regulations, environmental issues, principles of quality assurance, laboratory design, and safety management. *Two lecture and two seminar hours per week, fall.* Tulis.
- PALP 277 Special Topics in Biohazard Science (2).** Prerequisites, PALP 270, 271, and permission of instructor. Current problems and trends in biohazard science, impact of emerging legislation, development of standards, and other topics. *One lecture and two seminar hours per week, spring.* Tulis.
- PALP 331 Seminar in Parasitology and Laboratory Practice (1).** Prerequisites, permission of the staff. Discussion of selected topics in the fields of medical parasitology, laboratory practice, and biohazard science. Intended for MSPH and MPH students. *One seminar hour a week, spring.* Staff.
- PALP 333 Advanced Seminar in Parasitology and Laboratory Practice (1).** Prerequisites, permission of staff. Research presentations by doctoral students in medical parasitology, laboratory practice, and biohazard science. *One seminar hour a week, fall and spring.* Staff.
- PALP 334 Research in Parasitology (2 or more).** Open to advanced students only. *Four or more laboratory hours a week, to be arranged, fall and spring.* Goulson, Hall, Merritt, Seed, Weatherly.
- PALP 336 Research in Public Health Laboratory Methodology (2 or more).** Open to advanced students only. *Four or more laboratory hours a week, to be arranged, fall and spring.* Baric, Stamm, Weatherly, Goulson, Tulis.

- PALP 392 **Master's Paper** (1-3). *Fall, spring, and summer.*
- PALP 394 **Doctoral Dissertation** (3-9). *Fall and spring.* Staff.
- PALP 400 **General Registration** (0).

### Curriculum in Public Health Nursing

- PHNU 101 **Aging and Human Development** (HPAA/HEED/NUTR) (3). Lectures concerned with biological, physical, emotional, demographic and social aspects of aging. Field trips to institutions and home visits. *Three lecture hours per week.* Staff.
- PHNU 140 **Readings in Public Health Nursing** (1-3). Prerequisites to be arranged with the faculty. Reading and tutorial guidance in a selected area of public health nursing or occupational health nursing. *Two or more hours per week, fall, spring, and summer.* Staff.
- PHNU 141
- PHNU 142
- PHNU 160 **Delivery of Community Nursing Services** (3). Permission of instructor required. Analysis of patterns of organization of community nursing services and relationships to the health care delivery system. Special emphasis on basic management skills and their application. Tigar.
- PHNU 171 **Continuing Education Program Development** (2). Permission of instructor required. Use of systematic approach to educational program development for adult learners. Includes strategies for designing, implementing and evaluating CE and inservice programs. *Two lecture hours per week, fall.* Staff.
- PHNU 172 **Implementation of Continuing Education Programs.** (1). Permission of instructor required. Prerequisite: PHNU 171. Application of teaching-learning concepts, principles of adult education and group teaching strategies in the implementation of CE and inservice programs. *Two seminar hours per week spring.* Staff.
- PHNU 182 **Health Care Services in Occupational Settings** (3). Introduction to population-based health care for workers. Includes major causes of work-related morbidity and mortality, strategies for the team approach and components of occupational health programs. *Three lecture hours per week and a plant walk through, spring.* Staff.
- PHNU 185 **Topics in Worksite Health Promotion** (3) (HEED 185) An overview of critical scientific, political, economic, behavioral and other issues as they affect planning, conduct and evaluation of health promotion/risk reduction programs at the worksite. *Spring.* Hochbaum, staff.
- PHNU 193 **Innovation and Change in Public Health Nursing Practice I** (3). Permission of instructor required. Analysis of factors and approaches considered in innovation and change in public health nursing. This includes development of the theoretical base of public health nursing practice. *Two lecture and two seminar hours per week.* Staff.
- PHNU 196 **Advanced Practice in Public Health Nursing** (3). Permission of instructor required. Prerequisite: licensure as registered nurse in North Carolina. Concepts of health promotion/illness prevention applied to families/groups/community. Methods of assessment and intervention. Selected practice experiences. Analysis of case materials. Field fee: \$150.00. *One lecture, two seminar and two laboratory hours per week.* Staff.

- PHNU 201** **Special Studies (1-3).** Permission of Department chair required. Sections will focus on specific topics of current interest to health workers. Fliers describing the section offering will be distributed prior to registration each semester. *Lecture hours per week dependent upon credit, fall and spring.* Staff.
- PHNU 212** **Seminar on the Family (MHCH 212) (1).** Permission of instructor. Family theory, research and assessment; family relationships and environments that influence adult and child health and development; professions and institutions that influence family functioning. *Two seminar hours per week, spring and summer.* Schaefer.
- PHNU 215** **Analysis of Developmental Intervention Programs (MHCH 215) (2).** Permission of instructor. Critical review of intervention programs for infants and young children aimed at the prevention of developmental deficits. Examination of rationale for intervention, content and form of program delivery and methods for evaluating effectiveness. *Spring.* Staff.
- PHNU 217** **Developmental Indices of Health Status in Infants and Young Children (MHCH 217) (2).** Permission of instructor. Concepts and methods in the early identification of developmentally at-risk populations. Examines issues in reliability, validity, and applicability of measurements used in the assessment of early cognitive and social development. *One lecture and two seminar hours per week, spring.* Staff.
- PHNU 218** **Program Planning in Family Health (HPAA 218, MHCH 218) (3).** Permission required by instructor. Basic models and methods of program planning. Emphasis will be on application of methods through the development of program plans for significant family health problems. *Three lecture hours, spring.* Peoples-Sheps.
- PHNU 220** **Assessment and Care of Pregnant Women (2).** Theoretical basis of antepartal care emphasizing the concept of risk and assessment of maternal and fetal well-being. *Spring.* Staff.
- PHNU 222** **Family Planning Theory: Assessment and Care of Women in the Reproductive Years (MHCH 222) (1).** For health professionals doing family planning counseling. Includes modes of action effectiveness, contraindication, side effects, complications, advantages, disadvantages of temporary and permanent methods of birth control. *Spring.* Staff.
- PHNU 224** **School Age Population: Health Problems and Programs (MHCH 224) (3).** Permission of instructor required. Health needs and problems of school aged population. Development and evaluation of programs to meet those needs, including examination of legislative mandates, administrative structures and manpower utilization. *Spring.* Staff.
- PHNU 225** **Practicum: Leadership in School Health Programs (MHCH 225) (1-4).** Prerequisites MHCH/PHNU 224 or equivalent and permission of instructor. An elective, individually planned and supervised school-community based field experience. Designed to provide leadership experiences in delivery of school health services. *Three to twelve laboratory hours per week, spring.* Staff.
- PHNU 240** **Problems in Public Health Nursing (1-4).** A course for students in public health nursing. Students will make an intensive study of some special problem in public health relevant to public health nursing. The study will result in a paper which will demonstrate the application of research principles. *Hours to be arranged. Fall, spring, and summer.* Staff.

- PHNU 255 Case and Program Consultation in Public Health (MHCH 255) (2-3).** Examination of the practice of case and program consultation in public health settings. Analysis of consultation as a mutual problem-solving process including evaluation. Roles and relationships of consultant and consultee are considered with provision for experiential learning opportunities. Emphasis is on multidisciplinary practice. *One and one half lecture hours per week. Field experience and written report accepted for additional credit hours. Fall and spring.* Watkins.
- PHNU 261 Administration of Community Nursing Services I (3).** Permission of instructor. Concepts and methods of administering community nursing services. Functions of the nurse administrator in areas of organizing, staffing, program planning, priority setting and evaluation of services. *Fall.* Tigar.
- PHNU 262 Administration of Community Nursing Services II (3).** Permission of instructor required. Continuation of PHNU 261. Aspects of fiscal management, personnel management, legal considerations, records and reporting relating to delivery of community nursing services. Leadership styles, motivation and application of administrative processes. *Spring.* Tigar.
- PHNU 271 Instructional Approaches in Community Health Nursing (3).** Permission of instructor. Prerequisites: EDCI 208 and 265 or equivalents. Application of educational theories and curriculum development in nursing education. Study and critique of PHN content in nursing curriculum, of bases and strategies for curricular decisions and instructional approaches. *Two lecture and two seminar hours per week, fall.* Staff.
- PHNU 272 Practicum in Teaching Community Health Nursing (3-6).** Permission of instructor required. Supervised experience involved in teaching community health nursing to students at the undergraduate level. Problems related to curriculum, organization, and faculty roles will be explored under faculty direction. Field fee: \$450.00. *One seminar hour biweekly and eighteen laboratory hours weekly, fall and spring.* Staff.
- PHNU 281 Occupational Health Nursing I (2-3).** Permission of instructor required. Concerns factors influencing the development and operation of occupational health nursing programs. General and special health services contingent on work environment and inherent health problems in the employed populations are considered. *Fall.* Rogers.
- PHNU 282 Occupational Health Nursing II (3).** Prerequisites, PHNU 281. Continuation of PHNU 281. Role components of occupational health nursing with emphasis on designing, implementing, evaluating occupational health programs. Application of principles of toxicology, epidemiology and occupational health nursing. Rogers.
- PHNU 283 Occupational Health Nursing, Field Practicum I (1-3).** Pre- corequisite, PHNU 281. Permission of instructor required. The student will have the opportunity to discuss concepts of OHN practice and the work environment. Concepts related to workplace hazards, interdisciplinary activities and nursing interventions with worker aggregates will be emphasized. *Three to nine laboratory hours per week.* Rogers.
- PHNU 284 Occupational Health Nursing Field Practicum II (1-3).** Prerequisites PHNU 281, 283. Corequisite PHNU 282. Permission of instructor required. The student will have the opportunity to learn about the managerial and administrative role of the OHN. Emphasis is placed on analysis of the organizational structure, external influencing factors and evaluation mechanisms. Rogers.

- PHNU 293 Innovation and Change in Public Health Nursing Practice II (3-6).** Permission of instructor required. Integration of selected factors of innovation and change into the practice of public health nursing. Practice credit variable. *Two lecture, two seminar, and zero to nine laboratory hours per week. Fall, spring, summer.* Staff.
- PHNU 297 Supervision in Public Health Nursing (3).** Permission of instructor required. For public health nursing and other selected students. Philosophy, principles and methods of supervision with emphasis on the supervisor's role in staff development and first-level management. *One lecture and four seminar hours per week, fall, spring.* Staff.
- PHNU 299 Research Methods in Public Health Nursing (2-4).** Permission of instructor required. Prerequisite: BIOS 101. Analysis of nursing research emphasizing methodology and implications for community health nursing practice. For over two credits, students develop a research design or participate in the research process. *Two lecture and two seminar hours for ten weeks for two credits. Additional proposal development seminars for four credits.* Selby.
- PHNU 300 Seminar in Public Health Nursing (3).** Permission of instructor required for nonmajors. A departmental core course designed to strengthen knowledge bases and leadership skills important to advanced public health nursing practice. Emphasis is placed on nursing theory and current issues affecting practice. *Two lecture and two seminar hours per week.* Staff.
- PHNU 301 Field Observation of National Community Health Nursing Service (1).** Permission of instructor required. Orientation to national agencies in Washington, D.C. area concerned with community health nursing practice. Supervised visits made to agencies, e.g., The Division of Nursing, HHS, ANA, and APHA headquarters. Field fee \$150.00. *Three full consecutive days of field observations and seminars, spring.* Henry and staff.
- PHNU 302 Public Health Nursing I (3).** Permission of instructor required for nonmajors. A core course designed to strengthen knowledge bases and leadership skills in advanced public health nursing practice. Emphasis is placed on nursing theory, current issues affecting practice, and community assessment. *Fall.* Staff.
- PHNU 303 Public Health Nursing II (3).** Permission of instructor required for nonmajors. A core course designed to strengthen knowledge bases and leadership skills in advanced public health nursing practice. Supervised experience emphasizing design and evaluation of public health nursing interventions for population aggregates. *Spring.* Staff.
- PHNU 340 Research in Public Health Nursing (1-4).** Prerequisite, PHNU 299 or the  
**341** equivalent and permission of instructor. Independent research in public health  
**342** nursing under supervision. *Two to eight laboratory hours per week, fall, spring, summer.* Staff.
- PHNU 360 Advanced Studies in Administration of Community Nursing Services (3).** Permission of instructor required. Integration of theories, concepts, methods of administration and nursing; their application to delivery of community nursing services. Emphasis is placed on roles and functions of the nurse manager. *Spring.* Tigar.
- PHNU 392 Master's Paper (1-6).** Permission of instructor required. A major paper on a problem relevant to public health nursing. This study may extend over more than one semester. Credit is assigned accordingly. *Fall, spring and summer.* Staff.

**PHNU 393** **Master's Thesis (3-9).** *Fall, spring, and summer, Staff.*

**PHNU 396** **Field Practice in Community Health Nursing (3-9).** Permission of instructor. Field experience in public health nursing or occupational health nursing practice. Study and observation of selected areas related to student's program of study. Field fee \$450.00 *Three laboratory hours per week, for each credit, fall, spring, and summer. Staff.*

**PHNU 400** **General Registration (0).**



# The University of North Carolina

Sixteen Constituent Institutions

**C. D. Spangler, Jr.**

B.S., M.B.A., D.H.L., 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 to 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, 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 six-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 PURPOSES<sup>1</sup>

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. 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 dwelling place of indefinite duration, as distinguished from a temporary place of abode; it is synonymous with "legal residence."

#### 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, 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.

<sup>1</sup>The 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.

**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 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 by the student 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. The domicile of a minor is presumed under the common law to be that of the father, subject to rebutting evidence. 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 an 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 public 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 BENEFIT<sup>1</sup>**

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 and if they have complied with the requirements of the Selective Service System, if applicable.

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.

**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 by the student of the Committee's decision. The Chairman will promptly process the appeal for transmittal to the State Residence Committee.

<sup>1</sup>The 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.

## 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 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, Room 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, Room 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.

## DRUG POLICY

Students, faculty members, administrators, and other employees of The University of North Carolina at Chapel Hill 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. Also, recent federal legislation requires, as a condition of employment, that any faculty or staff member engaged in the performance of a federal grant or contract must abide by the University's Drug Policy and must notify his or her dean, director, or department chair of any criminal drug statute conviction for a violation occurring in the work place not later than five days after the conviction.

Disciplinary proceedings against a student, faculty member, administrator, or other employee will be initiated when the alleged conduct is deemed to affect the University's interests. Penalties will be imposed for violation of the policies of the University only in accordance with procedural safeguards applicable to disciplinary actions against students, faculty members, administrators, and other employees. The penalties that may be imposed range from written warnings with probationary status to expulsions from enrollment and discharges from employment.

Every student, faculty member, administrator, and other employee of the University is responsible for being familiar with and complying with the terms of the Policy on Illegal Drugs adopted by the Board of Trustees. Copies of the full text of that policy are available from your dean, director, or department chair, or from the Office of the Dean of Students or the Employee Relations Division of the University Personnel Department.

14,500 copies of this public document were printed at a cost of \$21,874.76, \$1.51 per copy.



