

# The School of Pharmacy



**RECORD OF  
THE UNIVERSITY OF NORTH CAROLINA  
AT CHAPEL HILL**

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

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

Published by  
The University of North Carolina at Chapel Hill  
Chapel Hill, NC 27514

Issued 16 times a year as follows: 1 in August, 2 in December, 3 in January, 2 in February,  
3 in March, 3 in April, 1 in May, and 1 in June  
Pub. No. 651960

Second-class postage paid at Chapel Hill, NC 27514

Send All Undeliverable Copies and Changes of Address to School of Pharmacy,  
The University of North Carolina at Chapel Hill, Chapel Hill NC 27514

**FEBRUARY 1983**

**NUMBER 939**

**RECORD OF  
THE UNIVERSITY OF NORTH CAROLINA  
AT CHAPEL HILL**

**THE ONE HUNDRED AND  
EIGHTY-NINTH SESSION**

**THE SCHOOL OF PHARMACY**  
(USPS 651-960)

**Announcements for the Session 1983-1984**

**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL  
CHAPEL HILL, NC 27514**

# THE UNIVERSITY OF NORTH CAROLINA

## Sixteen Constituent Institutions

WILLIAM C. FRIDAY, B.S., LL.B, LL.D., D.C.L., President

ROY CARROLL, B.A., M.A., Ph.D., Vice President—Planning

RAYMOND H. DAWSON, B.A., M.A., Ph.D., Vice President—Academic Affairs

EDGAR WALTON JONES, B.S., M.S., Ph.D., Vice President—Research and Public Service

L. FELIX JOYNER, A.B., Vice President—Finance

CLEON F. THOMPSON, JR., B.S., M.S., Ph.D., Vice President—Student Services and Special Programs

JOHN P. KENNEDY, JR., S.B., B.A., M.A., J.D., Secretary of the University

GARY T. BARNES, B.A., Ph.D., Associate Vice President—Planning

HUGH S. BUCHANAN, JR., B.A., Associate Vice President—Finance

JOHN F. COREY, B.S., M.A., Ed.D., Associate Vice President—Student Services and Special Programs

JOHN W. DUNLOP, B.A., Director, The University of North Carolina Center for Public Television

DAVID N. EDWARDS, JR., B.A., J.D., Special Assistant to the President

KENNIS R. GROGAN, B.S., M.B.A., Associate Vice President—Finance

ARNOLD K. KING, A.B., A.M., Ph.D., Assistant to the President

R.D., McMILLAN, JR., B.S., Assistant to the President for Governmental Affairs

JEFFREY H. ORLEANS, B.A., J.D., Special Assistant to the President

ARTHUR PADILLA, B.S., M.A., Ph.D., Associate Vice President—Academic Affairs

RICHARD H. ROBINSON, JR., A.B., LL.B., Assistant to the President

DONALD J. STEDMAN, B.A., M.A., Ph.D., Associate Vice

President—Academic Affairs

ROBERT W. WILLIAMS, JR., A.B., M.A., Ph.D., Associate Vice President—

Academic Affairs

## History of the University

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

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

By 1969 The University of North Carolina included six constituent institutions, governed by a single Board of Trustees. This multicampus University had its beginnings in legislation enacted in 1931 that defined The

University of North Carolina to include The University of North Carolina at Chapel Hill, North Carolina State University at Raleigh, and The University of North Carolina at Greensboro. In the 1960s three additional campuses were added: The University of North Carolina at Charlotte, The University of North Carolina at Asheville, and The University of North Carolina at Wilmington.

Beginning in 1877, the General Assembly of North Carolina established or acquired ten additional separately governed state-supported senior institutions of higher education. They are: Appalachian State University, East Carolina University, Elizabeth City State University, Fayetteville State University, North Carolina Agricultural and Technical State University, North Carolina Central University, North Carolina School of the Arts, Pembroke State University, Western Carolina University, and Winston-Salem State University. Then, in 1971, the General Assembly redefined The University of North Carolina, and under the terms of that legislation all sixteen public senior institutions became constituent institutions of The University of North Carolina.

The constitutionally authorized Board of Trustees of the 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.

# UNIVERSITY CALENDAR

## 1983-1984

### SUMMER SESSION, 1983

#### First Term

May 23, Monday	Registration.
May 24, Tuesday	First day of classes.
May 25, Wednesday	Last day for late registration.
May 30, Monday	Holiday, Memorial Day.
May 31, Tuesday	Last day to drop a course for credit on student's financial account.
June 10, Friday	Last day to drop courses (undergraduates).
June 13, Monday	Last day to withdraw for credit on student's financial account.
June 17, Friday	Last day to drop courses (graduates).
June 24, Friday	Last day of classes.
June 25, Saturday	Reading day.
June 27-28, Monday-Tuesday	Final examinations.

#### Second Term

July 5, Tuesday	Registration.
July 6, Wednesday	First day of classes.
July 7, Thursday	Last day for late registration.
July 12, Tuesday	Last day to drop a course for credit on student's financial account.
July 22, Friday	Last day to drop courses (undergraduates).
July 26, Tuesday	Last day to withdraw for credit on student's financial account.
July 29, Friday	Last day to drop courses (graduates).
August 5, Friday	Last day of classes.
August 6, Saturday	Reading day.
August 8-9, Monday-Tuesday	Final examinations.

### FALL SEMESTER, 1983

August 17, Wednesday	Fall Semester opens.
August 21, Sunday	Residence halls open for freshmen and undergraduate transfer students.
August 22-23, Monday-Tuesday	Orientation of all new freshmen and undergraduate transfer students according to schedule to be announced.
August 24, Wednesday	Residence halls open for returning students.
August 24-26, Wednesday-Friday	Registration according to schedule to be announced.

August 29, Monday	Classes begin for all students. Late registration begins. Fee of \$5.00 charged for late registration.
September 2, Friday	End of late registration and change in schedules. No registration accepted after this date.
September 5, Monday	Holiday, Labor Day.
September 12, Monday	Last day to drop a course for credit on student's financial account.
September 23, Friday	Last day for graduate students to file applications with Dean for degree to be awarded in December.
October 7, Friday	Last day for dropping courses (undergraduates) and last day for Pass/Fail declarations.
October 11, Tuesday	Last day for filing applications with Dean for degree to be awarded in December (undergraduates).
October 12, Wednesday	University Day.
October 19, Wednesday	Fall Recess—Instruction ends 5 P.M.
October 21, Friday	Progress Reports for freshmen due.
October 24, Monday	Instruction resumes 8 A.M.
October 28, Friday	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).
October 31-November 4, Monday-Friday	Pre-registration for Spring Semester.
November 12, Saturday	Written examinations for master's candidates for December graduation may not be taken after this date.
November 18, Friday	Last day for graduate students to drop a course.
November 23, Wednesday	Thanksgiving Recess—Instruction ends 1 P.M.
November 28, Monday	Instruction resumes 8 A.M.
December 9, Friday	Fall Semester classes end.
December 9, 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 12, Monday	Reading day.
December 13, Tuesday	Fall Semester examinations begin.
December 21, Wednesday	Fall Semester examinations end.

**SPRING SEMESTER, 1984**

January 8, Sunday	Spring Semester opens.
January 8 (noon), Sunday	Residence halls open for new students.
January 9, Monday	Residence halls open for returning students.
January 9-10, Monday-Tuesday	Registration/schedule changes.
January 11, Wednesday	Classes begin for all students. Late registration begins. Fee of \$5.00 charged for late registration.
January 17, Tuesday	End of late registration and change in schedules. No registration accepted after this date.
January 24, Tuesday	Last day to drop a course for credit on student's financial account.
January 27, Friday	Last day for graduate students to file applications with Dean for degree to be awarded in May.
February 3, Friday	Last day for filing applications with Dean for degree to be awarded in May (undergraduates).
February 21, Tuesday	Last day for dropping courses (undergraduates) and last day for Pass/Fail declarations.
March 2, Friday	Spring Recess—Instruction ends 5 P.M.
March 12, Monday	Instruction resumes 8 A.M.
March 13, Tuesday	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).
March 24, Saturday	Written examinations for master's candidates for May graduation may not be taken after this date.
April 4-10, Wednesday-Tuesday	Pre-registration for summer and fall.
April 12, Thursday	Last day for graduate students to drop a course.
April 13, Friday	Final signed copies of doctoral dissertations and master's theses for candidates for the May graduation must be filed in the Graduate School by this date.
April 23, Monday	Holiday, Easter Monday.
April 26, Thursday	Spring Semester classes end.
April 27, Friday	Reading day.
April 30, Monday	Spring Semester examinations begin.
May 9, Wednesday	Spring Semester examinations end.
May 13, Sunday	Commencement.

## THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

CHRISTOPHER COLUMBUS FORDHAM III, M.D., Chancellor  
SUSAN HAUGHTON EHRINGHAUS, J.D., Assistant to the Chancellor  
DOUGLASS HUNT, LL.B., Special Assistant to the Chancellor  
CLAIBORNE STRIBLING JONES, Ph.D., Special Assistant to the Chancellor  
GILLIAN TOWNSEND CELL, Ph.D., Affirmative Action Officer  
SARAH VIRGINIA DUNLAP, B.S., Secretary to the University  
DONALD ARTHUR BOULTON, Ed.D., Vice Chancellor and Dean of Student Affairs  
GEORGE PHILIP MANIRE, Ph.D., Vice Chancellor and Dean of the Graduate School  
JOHN CHARLES MORROW III, Ph.D., Provost  
JOHN DOUGLAS SWOFFORD, M.Ed., Director of Athletics  
<sup>1</sup>JOHN LEWIS TEMPLE, B.B.A., Vice Chancellor, Business and Finance  
ROLLIE TILLMAN, JR., D.B.A., Vice Chancellor, University Relations  
<sup>2</sup>JAMES RAY TURNER, Associate Vice Chancellor, Health Affairs  
HAROLD GENE WALLACE, M.Div., Vice Chancellor, University Affairs  
<sup>3</sup>FARRIS WADE WOMACK, Ed.D., Vice Chancellor, Business and Finance

## PHARMACY FACULTY AND STAFF

### Administration

TOM S. MIYA (1977), Ph.D., Dean and Professor, School of Pharmacy; Professor of Pharmacology  
GEORGE H. COCOLAS (1958), Ph.D., Associate Dean and Professor of Medicinal Chemistry  
JACK K. WIER (1961), Ph.D., Associate Director, Student Affairs and Associate Professor  
CAROLYN W. CAPOWSKI (1978), A.B., Director of Public Relations and Clinical Instructor of Pharmacy Administration  
REBECCA S. WORK, Assistant to the Dean  
STEPHANIE BREWINGTON, Administrative Secretary  
HELEN BROOKS, Clerk-Typist  
LINDA R. GOSWICK, Secretary to the Dean  
KAYE HICKS, Receptionist  
LINDA MCGLOIN, Accounting Technician  
GAIL R. MORIARTY, Administrative Assistant, Student Affairs  
BOBBIE SANDERS, Word Processor  
CARLA SHUFORD, Secretary, Student Affairs

1. Resigned June 30, 1982.
2. Effective November 15, 1982.
3. Effective January 15, 1983.

## Division of Pharmaceutics

JAMES SWARBRICK (1981), Ph.D., Professor and Head of Pharmaceutics Division  
B. WESLEY HADZIJA (1971), Ph.D., Associate Professor  
RICHARD J. KOWALSKY (1972), Pharm.D., Assistant Professor  
GEOFFREY LEE (1982), Ph.D., Visiting Instructor  
GARY LIVERSIDGE (1983), Ph.D., Assistant Professor  
ALBERT M. MATTOCKS (1966), Ph.D., Professor Emeritus  
JAMES L. OLSEN (1969), Ph.D., Associate Professor  
HANI M. SADEK (1978), Ph.D., Assistant Professor  
ROBERT SHREWSBURY (1980), Ph.D., Assistant Professor  
WILLIAM W. TAYLOR (1952), Assistant Professor  
HERMAN O. THOMPSON (1977), Ph.D., Professor Emeritus  
WILLIAM A. WARGIN (1977), Ph.D., Assistant Professor  
SONJA WHITE (1982), B.S., Clinical Instructor  
NANCY JENKINS, Secretary

## Division of Medicinal Chemistry and Natural Products

CLAUDE PIANTADOSI (1957), Ph.D., Professor and Chairman of Medicinal  
Chemistry Division  
GEORGE H. COCOLAS (1958), Ph.D., Professor  
GEORGE P. HAGER (1966), Ph.D., Professor Emeritus  
IRIS H. HALL (1970), Ph.D., Associate Professor  
KHALID S. ISHAQ (1970), Ph.D., Associate Professor  
KURO-HSIUNG LEE (1970), Ph.D., Professor  
LARRY J. LOEFFLER (1971), Professor  
JAMES H. MAGUIRE (1982), Ph.D., Assistant Professor  
FRED T. SEMENIUK (1947), Ph.D., Professor Emeritus  
JACK K. WIER (1961), Ph.D., Associate Professor  
STEVEN WYRICK (1982), Ph.D., Assistant Professor  
NARIHIKO FUKAMIYA (1982), Ph.D., Postdoctoral Fellow  
MOTOHARU JU-ICHI (1982), Ph.D., Postdoctoral Fellow  
KEIKO SUZUKI (1982), Ph.D., Postdoctoral Fellow  
WALLACE WILLIAMS (1982), Ph.D., Postdoctoral Fellow  
CHRIS BOWMAN, Secretary  
TOMMIE EVANS, Secretary

## Division of Pharmacy Administration

JEAN P. GAGNON (1975), Ph.D., Professor and Head of Pharmacy Administration  
Division  
LEONARD BERLOW (1970), M.H.A., Assistant Professor Emeritus  
CAROLYN CAPOWSKI (1978), A.B., Clinical Instructor  
MELVIN A. CHAMBERS (1959), Ph.D., Professor  
WILLIAM DIAMOND (1982), M.S., Visiting Instructor  
ABRAHAM HARTZEMA (1981), Ph.D., Assistant Professor  
JOHN MACKOWIAK (1982), Ph.D., Teaching Assistant  
LEROY D. WERLEY, JR. (1967), M.H.A., Associate Professor Emeritus  
CATHY HARDEE, Secretary

## **Division of Pharmacy Practice**

FRED M. ECKEL (1966), M.S., Professor and Head of the Pharmacy Practice Division  
STEVE N. ALMOND (1971), B.S., Clinical Assistant Professor  
STEPHEN M. CAIOLA (1968), M.S., Associate Professor  
DANIEL T. CASTO (1982), Pharm.D., Assistant Professor  
BETTY H. DENNIS (1975), M.S., Assistant Professor  
NED GRIFFIN (1982), Pharm.D., Clinical Instructor  
SALLY GUTHRIE (1982), Pharm.D., Clinical Assistant Professor  
LAWRENCE J. HAK (1973), Pharm.D., Associate Professor  
PATSY S. HUFF (1974), B.S., Clinical Assistant Professor  
TIMOTHY J. IVES (1981), Pharm.D., Clinical Assistant Professor  
CELESTE LINDLEY (1979), B.S., Clinical Assistant Professor  
HERBERT PATTERSON (1981), Pharm.D., Assistant Professor  
A. WAYNE PITTMAN (1972), M.S., Assistant Professor  
JOHN ROBERT POWELL (1980), Pharm.D., Associate Professor  
RITA KAY PROCTOR (1977), B.S., Clinical Assistant Professor  
CHARLES PULLIAM (1982), M.S., Assistant Professor  
RALPH H. RAASCH (1976), Pharm.D., Assistant Professor  
NELLE BARBOUR, Secretary  
LINDA KELLERMAN, Secretary

## **Area Health Education Center (AHEC) Program**

CLAUDE U. PAOLONI (1967), B.S., Associate Professor, Director of  
Pharmacy—AHEC  
ROBERT L. SMITH (1976), MS., Clinical Associate Professor and Assistant Director  
of Pharmacy—AHEC  
DAVID D. CLAYTOR (1977), B.S., Clinical Associate Professor and Assistant Director  
of Pharmacy—AHEC  
JONI I. BERRY (1980), M.S., Clinical Instructor, Wake—AHEC  
BRUCE R. CANADAY (1975), Pharm.D., Clinical Assistant Professor,  
Wilmington—AHEC  
PETER GAL (1980), Pharm.D., Clinical Assistant Professor, Greensboro—AHEC  
PAMELA U. JOYNER (1975), M.S., Clinical Assistant Professor, Wake—AHEC  
JUNE H. MCDERMOTT (1980), M.S., Clinical Instructor  
KAREN S. OLES (1980), Pharm.D., Clinical Assistant Professor, Northwest—AHEC  
TIMOTHY E. POE (1977), Pharm.D., Clinical Assistant Professor, Bowman-Gray and  
Northwest—AHEC  
WILLIAM T. SAWYER (1977), M.S., Assistant Professor and Pharmacist,  
Charlotte—AHEC  
C. EDWIN WEBB, JR. (1975), Pharm.D., Clinical Assistant Professor,  
Mountain—AHEC  
JOHN S. WEINER (1982), Pharm.D., Clinical Instructor, Fayetteville—AHEC  
DENISE M. WILLIAMS (1982), Pharm.D., Clinical Instructor, Area L—AHEC  
SHERRIE ALDRIDGE, Secretary  
MARTHA LEE, Secretary

## Adjunct Members of Faculty

- JOHN BETTIS (1981), Ph.D., Adjunct Associate Professor of Pharmaceutics  
 ROBERT BLUM (1978), Ph.D., Adjunct Associate Professor of Pharmaceutics  
 WILLIAM H. BRINER (1970), B.S., Adjunct Assistant Professor of Pharmaceutics  
 CHESTER J. CAVALLITO (1978), Ph.D., Adjunct Professor of Medicinal Chemistry  
 JAMES W. CROW (1980), Ph.D., Adjunct Assistant Professor of Pharmaceutics  
 GARY D. DUNHAM (1982), B.S., Adjunct Instructor of Pharmacy  
 WILLIAM H. EDMONDSON (1978), Ph.D., Adjunct Associate Professor of Pharmacy  
 Administration  
 FRED ESHELMAN (1981), Pharm.D., Adjunct Assistant Professor of Pharmacy  
 EDWARD FRENIER (1981), M.S., Adjunct Assistant Professor of Pharmacy  
 ELVIN HOLSTIUS (1981), Ph.D., Adjunct Professor of Pharmaceutics  
 FREDERICK C. KULL (1972), Ph.D., Adjunct Associate Professor of Pharmacy  
 Administration  
 ALLEN J. LAI (1979), Ph.D., Adjunct Assistant Professor of Pharmaceutics  
 VIRGIL S. LUCAS (1982), B.S., Adjunct Instructor of Pharmacy  
 JAMES MCALLISTER (1982), M.S., Adjunct Assistant Professor of Pharmacy  
 DENNIS MOORE (1982), Pharm.D., Adjunct Assistant Professor of Pharmacy  
 HAROLD R. MURDOCK (1979), Ph.D., Adjunct Professor of Pharmaceutics  
 WILLIAM J. MURRAY (1977), M.D., Adjunct Associate Professor of Pharmacy  
 FRANK B. PENTA (1980), Ed.D., Adjunct Associate Professor of Pharmacy  
 VLADIMIR PETROW (1976), D.Sc., Adjunct Professor of Medicinal Chemistry  
 JOHN R. PLACHETKA (1976), Pharm.D., Adjunct Assistant Professor of Pharmacy  
 ROLAND POUST (1981), Ph.D., Adjunct Associate Professor of Pharmaceutics  
 JIM EDMOND RIVIERE (1982), Ph.D., Adjunct Associate Professor of Pharmacy  
 MILTON SKOLAUT (1970), B.S., Adjunct Assistant Professor of Pharmacy  
 FRED L. SNYDER (1966), Ph.D., Adjunct Professor of Medicinal Chemistry  
 RONNIE SPIVEY (1981), Ph.D., Adjunct Assistant Professor of Pharmaceutics  
 WARREN STERN (1981), Ph.D., Adjunct Associate Professor of Pharmacy  
 JOEL SUTTON (1981), Ph.D., Adjunct Assistant Professor of Pharmaceutics  
 JACK H. UPTON (1979), B.S., Adjunct Assistant Professor of Pharmacy  
 MONROE E. WALL (1966), Ph.D., Adjunct Professor of Medicinal Chemistry and  
 Medicine  
 RICHARD M. WELCH (1976), Ph.D., Adjunct Associate Professor of Pharmaceutics  
 DAVID R. WORK (1969), J.D., Adjunct Associate Professor of Pharmacy  
 Administration

## Joint Members of Faculties—School of Medicine and School of Pharmacy

- HUGH J. BURFORD (1971), Ph.D., Associate Professor of Pharmacology  
 BRUCE CANADAY (1978), Clinical Assistant Professor of Pharmacy and Clinical  
 Assistant Professor, Medicine  
 DANIEL T. CASTO (1982), Pharm.D., Assistant Professor of Pharmacy and Clinical  
 Assistant Professor, Pediatrics  
 ALLEN CATO (1977), M.D., Clinical Associate Professor of Pharmacy and Clinical  
 Assistant Professor, Pediatrics  
 PETER GAL (1981), Pharm.D., Clinical Assistant Professor of Pharmacy and Clinical  
 Instructor, Family Medicine

- LAWRENCE J. HAK (1973), Pharm. D., Associate Professor of Pharmacy and Clinical Assistant Professor, Medicine
- J. HEYWARD HULL (1978), M.S., Clinical Associate Professor of Pharmacy and Clinical Assistant Professor, Medicine
- TIMOTHY J. IVES (1981), Pharm.D., Clinical Assistant Professor of Pharmacy and Clinical Assistant Professor, Family Medicine
- RICHARD J. KOWALSKY (1972), Pharm.D., Assistant Professor of Radiology and Pharmaceutics
- ARTHUR J. MCBAY (1969), Ph.D., Professor of Pharmacy and Pathology
- TOM S. MIYA (1977), Ph.D., Dean and Professor, School of Pharmacy and Professor of Pharmacology
- CLAUDE PIANTADOSI (1972), Ph.D., Professor of Medicinal Chemistry and Biochemistry
- A. WAYNE PITTMAN (1972), M.S., Assistant Professor of Pharmacy and Clinical Assistant Professor, Medicine
- J. ROBERT POWELL (1980), Pharm.D., Associate Professor of Pharmacy and Associate Professor, Pharmacology
- RALPH H. RAASCH (1976), Pharm.D., Assistant Professor of Pharmacy and Clinical Assistant Professor, Medicine
- WILLIAM T. SAWYER (1977), M.S., Assistant Professor of Pharmacy and Clinical Assistant Professor, Family Medicine
- MONROE E. WALL (1966), Ph.D., Adjunct Professor of Medicinal Chemistry and Biochemistry

## **Clinical Faculty\***

- JONI I. BERRY (1980), M.S., Clinical Instructor
- WILLIAM J. BICKET (1975), M.S., Clinical Assistant Professor
- REX BROWN (1981), Pharm.D., Clinical Assistant Professor
- JAMES A. BUSTRACK (1981), Pharm.D., Clinical Assistant Professor
- ALLEN CATO (1977), M.D., Clinical Associate Professor
- JAN CHILDRESS (1981), M.S., Clinical Assistant Professor
- GILES CLOUTIER (1977), Ph.D., Clinical Assistant Professor
- FRANCES GUALTIERI (1981), B.S., Clinical Instructor
- SANDRA HAK (1975), B.S., Clinical Instructor
- JOSEPH T. HANLON (1982), M.S., Clinical Assistant Professor
- THOMAS HUGHES (1981), B.S., Clinical Assistant Professor
- J. HEYWARD HULL (1978), M.S., Clinical Associate Professor
- JOHN KESSLER (1981), Pharm.D., Clinical Assistant Professor
- DEBORAH MONTAGUE (1982), M.S., Clinical Assistant Professor
- MARTHA PECK (1979), M.S., Clinical Instructor
- JOHN H. PFIFFERLING (1981), Ph.D., Clinical Associate Professor
- ALLEN ROSMAN (1978), Pharm.D., Clinical Assistant Professor
- DAVID RUDD (1977), M.S., Clinical Assistant Professor
- BENJAMIN O. WILLIAMS (1976), M.S., Clinical Assistant Professor

## **Stockroom**

- CLIFTON I. STONE, Stockroom Manager
- LEROY CLARK, Stock Clerk

\*Nonsalaried

## **Graduate Education and Research**

JAMES SWARBRICK, Chairman

CHRIS BOWMAN, Secretary

## **Extension Program**

CLAUDE U. PAOLONI, Director

## **THE UNIVERSITY**

The University of North Carolina, the first state university in the United States to open its doors to students, is situated at Chapel Hill in the beautiful Piedmont section of hills and forests. Its environment of natural beauty and simple culture, of age and traditions, is impressive. Chapel Hill is ten miles from Durham, thirty miles from Raleigh, and fifty miles from Greensboro. It may be reached by bus lines which maintain frequent schedules from these three points.

## **GENERAL INFORMATION**

### **Student Government**

The student body of the University is self-governing. The functions of this government are both disciplinary and administrative. These functions are exercised by executive, legislative, and judicial branches of representative government under a student constitution.

### **Religious Interests and Activities**

The interest of the University in the religious life of the community is expressed in the encouragement of foundations or centers supported by Protestant, Catholic, and Jewish institutions in the community and the support of the YMCA-YWCA on campus. The foundations and the YMCA-YWCA are staffed by theologically trained persons who seek to minister to the religious interests and needs of the entire University.

### **Medical Attention**

To provide proper medical attention for the student, the University employs nine full-time physicians and maintains a well-appointed infirmary, with a modern X-ray unit under the direction of a full-time technician, and with a laboratory for diagnostic pur-

poses under the direction of two full-time technicians. The infirmary is under the immediate supervision of the Director of Student Health Services and is provided with seventeen experienced nurses who are under the general supervision of a head nurse. At the discretion of the attending physician a student may be admitted to its wards, and for such services as may be rendered by the staff no charges are made. However, the student will be required to pay for any additional service (consultation, special nurses, and operations) recommended by the attending physician and approved by the parent or guardian.

## **Physical Education**

A physical examination is given to students at the time of entrance. All students are classified on the basis of the examination, and an effort is made to adapt the program of physical education to the individual's particular needs.

Physical education is required of all undergraduate students two periods each week for the first year. Encouragement is given to participation in athletic sports and all kinds of physical activity throughout a full program of intercollegiate and intramural athletics.

## **Libraries**

The Pharmacy Collection is integrated into the holdings of the Health Sciences Library which includes more than 126,000 volumes devoted to Pharmacy, Medicine, Dentistry, Nursing, Public Health, and other associated sciences.

The general University Library and ten specialized departmental libraries are also available to students of pharmacy. This collection contains approximately 2,109,448 volumes. Including manuscripts, pamphlets, maps, microfacsimiles, recordings, clippings, prints, etc., the count of holdings is more than 7,530,486 pieces. The rate of growth of the Library averages about 100,000 volumes a year through purchase, gift, and exchange. Periodical and other serial subscriptions number 14,500.

## 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*.

**General.** Every applicant for admission is required to make a statement as to his or her length of residence in North Carolina. The tuition charge for legal residents of North Carolina is less than for nonresidents. To qualify for in-state tuition, a legal resident must have maintained his or her domicile 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 mere temporary residence incident to enrollment in an institution of higher education. A student seeking classification as a resident for tuition purposes must complete an application for resident status (obtainable at his or her admissions office) and return it to the proper admissions office. Every student must be classified either resident or nonresident before enrolling. Unless the student supplies enough information to allow the admissions officer to classify the student a nonresident-for-tuition purposes, the student will be classified a nonresident for tuition purposes.

When an enrolled student has applied for classification as a resident-for-tuition-purposes and receives an institutional request for more information in connection with that application before the end of the term for which classification is sought, the student must respond to that request no later than three weeks after the end of the term. If the student does not receive the request for sup-

1. The information in this section comes from three sources: (i) North Carolina General Statutes, Sec. 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 August 1981, (iii) Chancellor's Rules and Procedures for Residence Classification of Students for Tuition Purposes.

plemental information until after the end of the term in question, he or she must supply the requested information within three weeks of 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.

**Domicile.** Domicile means one's permanent dwelling place of indefinite duration, as distinguished from a temporary place of abode; synonymous with "legal residence."

**Burden of Proof and Statutory Prima Facie Evidence.** The student 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 student 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 student is not a legal resident of North Carolina unless the student has lived in this state the five consecutive years prior to enrolling or reregistering. To overcome this prima facie showing of nonresidence, the student must produce evidence that he or she is a North Carolina domiciliary despite the parents' nonresident status.

b. Conversely, if the parents of the student are domiciliaries of North Carolina under the Statute, this fact constitutes prima facie evidence that the student is a domiciliary of North Carolina. This prima facie evidence may also be overcome by other evidence of legal residence. If the student has neither living parents nor legal guardian, the prescribed prima facie evidence rule cannot and does not apply.

## Statutory Exceptions

a. **Grace Period.** If a student has been properly classified as a resident-for-tuition-purposes and, thereafter, his or her state of legal residence changes, the student does not automatically lose the benefit of the in-state tuition rate immediately. Instead the statute provides for a grace period if the following conditions are satisfied:

1. The student must have been properly classified as a resident for tuition purposes, on the basis of a valid finding that the student

in fact was a legal resident of North Carolina and had been such for the requisite twelve-month period prior to classification;

2. At the time of subsequent change of legal residence to a state other than North Carolina, the student must have been enrolled in a public institution of higher education in North Carolina.

The extent of this grace period (during which the in-state rate is applicable in spite of the fact that the student is not a legal resident of North Carolina) is twelve months from the date of change in legal residence plus any portion of a semester or academic term remaining, as of the expiration date of the twelve-month period, in which the student is enrolled.

b. *Qualifying Periods for Spouses.* By virtue of the provisions of G.S. 116-143.1, if a student 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 spouse of the student, if the spouse has been a legal resident of the State for the requisite twelve-month period.

c. *Reacquisition of Resident Tuition Status.* The prescribed twelve-month period of legal residence may also 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 re-established North Carolina domicile within twelve months after abandoning it. Students should consult their admissions offices for a detailed explanation of the conditions which must be met to qualify under this section.

**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.

**Minors.** A minor is any person who has not reached the age of eighteen years. The domicile of a minor is that of the father. With a few exceptions noted below, this presumption is virtually irrefut-

table. 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.

In determining residence status for tuition purposes, there are two 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 an 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, when he or she reaches the age of eighteen, he or she will be deemed to be a legal resident of North Carolina of at least twelve months' duration.

Even though a person is a minor, under certain circumstances the person may be treated by the law as being sufficiently indepen-

dent 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 in fact has been established.

**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 United States 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 United States 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 and D 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.

**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.

**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.

**Change of Status.** 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 by the admitting institution that the student is a resident for tuition purposes, relative to the term of initial enrollment or reenrollment, the student is classified a nonresident for tuition purposes prior to actual matriculation. A residential 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 division 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 treated as a new student by the institution to which he or she is transferring and must be assigned an initial residential classification for tuition purposes.

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.** Any student or prospective student in doubt concerning his or her residence status must bear 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 ground for disciplinary action.

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 as 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.

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.

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.

**Appeals of Rulings of Admissions Officers.** 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 such 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 decision of the Residence Status Committee must give notice in writing of that fact, within ten days of receipt by the student of the decision of the Committee, to the Chairman of the Residence Status Committee, and the Chairman promptly processes the appeal for transmittal to the State Residence Committee.

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 applicants make accelerated handling impossible.

## **NOTICE ON “DIRECTORY INFORMATION” TO ALL STUDENTS OF THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL**

The University of North Carolina at Chapel Hill has routinely made public certain information about its students. Some typical ways this has been done include the following: names of students who are selected by the various honorary societies, who receive scholarships, who make the Dean’s List, who hold offices, or who are members of athletic teams are frequently made public. To facilitate campus communication the University annually publishes the **Campus Directory**. Some professional and graduate school student groups publish directories of students in their departments or schools. The annual commencement program publishes the names of persons who have received degrees during the year.

The Family Educational Rights and Privacy Act defines the term “directory information” to include the following categories of information: the student’s name, address, telephone listing, date and place of birth, major field of study, 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. The University will make public information about each student **limited** to these categories in ways such as those described above. Of course, information from all these categories is not made public in every listing. The **Campus Directory**, for example, publishes only names, addresses and telephone numbers.

Students who do not wish to have any or all of such “directory information” made public without their prior consent must notify the Office of Records and Registration, The University of North Carolina at Chapel Hill, of this fact in a signed and dated statement specifying items that are not to be published. This notice must be received by the Office of Records and Registration by the end of the registration period for the semester or session of first enrollment or, after an absence, of re-enrollment, and by the end of each fall registration period thereafter.

### **Delayed Registration**

Any student registering later than the time appointed for his registration must pay an additional fee of five dollars (\$5.00). No appeal from the late registration charge will be granted, unless the delay results from circumstances clearly beyond the student’s con-

trol. Such an appeal must be made in writing to the Director of the Office of Records and Registration, must show justification for the delay in registering, and must bear the approval of the Dean of the School of Pharmacy.

## EXPENSES

### Tuition and Fees for Each Semester

	N.C. Resident	Non- resident
Tuition .....	\$250.00	\$1,130.00
Fees .....	<u>136.50</u>	<u>136.50</u>
Total	\$386.50	\$1,266.50

\$50.00 — Academic Field Fee — Billed During Fifth Year when students register for Pharmacy Practice 92L

The University reserves the right to make changes in tuition and any other fees at any time.

**Laboratory Breakage Deposit:** Students taking laboratory courses are required to pay for breakage of equipment, use of more than normal expendable supplies and materials, and depreciation on unusual equipment. These fees are payable at the end of each semester prior to taking the final examination in these courses. Failure to pay breakage fees will result in the withholding of grades.

### Summary of Estimated Expenses for the Academic Year for an Average Student Who Is a Resident of North Carolina

Tuition (School of Pharmacy) .....	\$ 500.00
Fees .....	273.00
Board estimated .....	1,350.00
Residence Hall room (average) .....	700.00
(See "Room to Live" booklet.)	
Miscellaneous expenses (clothing, travel, spending) .....	650.00
Books and supplies, estimated for year .....	275.00
Total for North Carolina Resident .....	\$3,748.00
Total for Nonresident .....	\$5,508.00

## Payment of Bills

Tuition and fees are due at registration and must be paid by the last day of registration for each semester. Bills may be paid in advance. Checks should be made payable to The University of North Carolina at Chapel Hill and mailed to the University Cashier, 103 Bynum Hall 008A, Chapel Hill, NC 27514. Failure to pay results in the assessment of a late fee.

## Housing, Food, Laundry, and Linen Service

The University reserves the right to approve the housing of all students whether they live on or off the campus. Each University student is required to maintain a correct local address with the University. By Trustee action the administration is authorized to establish minimum standards of health, safety, and general welfare in regard to housing and to require that students maintain their residence in quarters which comply with these standards.

**Student Housing.** The primary objective of the Department of University Housing at Chapel Hill is to provide a physical and psychological atmosphere conducive to each and every student having opportunity to develop to the utmost his or her personality, ability, and sensitivity. The University provides residence hall accommodations for approximately 6800 registered students—undergraduate, graduate, and professional men and women. Three hundred and six apartments are available for student family housing.

Information regarding residence hall accommodations is available by writing to: Department of University Housing, Contracts Office, Carr Building, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27514.

Information regarding student family housing is available by writing to: Manager, UNC Student Family Housing, Odum Village, Branson Street, Chapel Hill, NC 27514.

**Privately Owned Residence Hall Accommodations—University Square.** Approximately 800 women and 700 men are housed in privately owned Granville Towers. The location is just off the UNC campus about one block from the Carolina Inn.

These supervised residence halls, one for women, one for men, and one coeducational have a cafeteria-dining commons. The fee charged includes room and board. Further information is available from Granville Towers, University Square, Chapel Hill, NC 27514.

Arrangements for these accommodations should be made directly with Granville Towers Business Office.

**Student Dining Facilities.** Dining facilities are operated in locations convenient to residence halls and meals are offered at reasonable rates.

**Laundry Service.** Finished laundry service at reasonable cost is provided by the University Laundry Department to students who wish to use it. This service is available on a Cash-and-Carry basis at any of the eight Laundry Call Offices. (Students desiring to do so may use the deposit system in lieu of Cash-and-Carry.)

**Additional Laundry Services.** Wash-Dry-Fold service (nothing finished) is available at any of the University Laundry Call Offices. This is an economical, Cash-and-Carry service and is separate from the finished laundry service.

**Linen Rental Service.** For students who do not wish to provide their own linen, the University Laundry will furnish two sheets, one pillow case, and three bath towels each week on an exchange basis. This service is available at all Laundry Call Offices. A fee is payable when service is requested.

Pillows may be rented for the school year. Blankets are available for a deposit fee, with provision for a part refund when the blanket is returned in good condition.

**Dry Cleaning.** Complete dry cleaning service is available at all University Laundry Call Offices on a Cash-and-Carry basis.

**Coin-Op-Service.** Coin-Op service is available at Avery, Connor, Craig, Ehringhaus, James, Joyner, Morrison, Odum Village, Spencer, and Winston.

## **Veterans Adviser**

Questions concerning educational benefits under the GI Bill should be taken up with the Veterans Adviser, Room 101, Hanes Hall.

## **Financial Aid**

The University has certain funds which may be granted as scholarships or loaned to any worthy student who can show definite need. In addition, there are part-time jobs involving various kinds of work which enable some students to earn a part of their expenses. Information about all these types of assistance may be obtained by writing to the Director of Student Aid, Vance Hall, UNC, Chapel Hill. Applications should be submitted in January for financial aid expected in the following academic year.

## THE SCHOOL OF PHARMACY

### Definition of Purposes

The University was established in obedience to the first Constitution of the State which was adopted in December, 1776, and to the Charter which was granted by the General Assembly in 1789. A clause of section 41 of the Constitution declared that "all useful learning shall be duly encouraged and promoted in one or more Universities." In keeping with this Constitutional directive, the School of Pharmacy has the following purposes: to preserve, augment, criticize and transmit pharmaceutical knowledge; to advance and create pharmaceutical knowledge; to aid in conserving or improving the health and welfare of the public through influencing the patient, the health practitioner, or their common environment.

A thorough program of undergraduate instruction, graduate instruction, continuing education, and research is maintained. Every effort is made in the classrooms and laboratories, and through student organizations to develop character, personality, and integrity to the purposes of responsible citizenship and leadership.

## THE PHARMACY PROFESSION

Pharmacy is a unique profession with an unlimited future. Pharmacists are vital members of this nation's essential health team. Expanding opportunities exist in the research, preparation, preservation and dispensing of drugs and pharmaceuticals.

Each year the 72 schools of pharmacy in the United States graduate close to 7,400 pharmacists. This number is far from adequate to fill existing needs. In fact, it is estimated that the **minimum** requirement is at least a thousand more every year. North Carolina has an acute shortage of pharmacists due to the number of single pharmacist store operations and the expansion of other areas of specialization, such as manufacturing and hospital pharmacy practice.

What about women in pharmacy? It is estimated that 10 percent of all pharmacists and 31 percent of all pharmacy students in the United States are women. This is a rewarding profession offering excellent working conditions and salaries. At the School of Pharmacy of The University of North Carolina, 58 percent of its students are women—which exceeds the national average.

## Should You Be A Pharmacist?

Well, that depends. Do you have a very real and sincere interest in people? This is essential since the pharmacist works as a member of the health team in intimate contact with people—both sick and well. **The main purpose of this speciality is the relief of human suffering and the advancement of better health for all.**

Personal qualifications are important before considering a pharmacy career. You should have ability, aptitude, and interest in science. This is quite natural since a pharmacist deals with drugs and chemicals and the ways these affect the human body. Do you strive for accuracy and order? These are other desirable attributes of the person who chooses pharmacy as a professional career.

Of course, you should have outstanding personal characteristics including high morals and good judgment.

## General Statement

The School of Pharmacy was established as an academic unit of The University of North Carolina in 1897 in response to urgent requests from the pharmacists of North Carolina. After many years in Howell Hall (named in honor of the School's first dean, Edward Vernon Howell), the School now occupies a modern, well-equipped building, Beard Hall (dedicated in 1960 and named in honor of the School's second dean, John Grover Beard). The School of Pharmacy is located in a medical center on the Chapel Hill campus and, with the Schools of Medicine, Dentistry, Public Health, and Nursing, it is a unit of the University's Division of Health Sciences.

The School benefits from excellent resources, both on and off campus, required for a center of excellence for pharmaceutical education, research, and service.

In its educational program, emphasis is given to the curriculum required for the Bachelor of Science in Pharmacy degree (B.S. in Pharm.). A five-year curriculum for this degree became mandatory in all schools of pharmacy starting in 1960 through actions taken by the American Association of Colleges of Pharmacy and the National Association of Boards of Pharmacy. This curriculum is designed and administered in accordance with the current and changing demands for pharmaceutical services in communities and institutions. The School's B.S. in Pharm. curriculum is up-to-date. It is broad and deep with respect to general education and professional principles and practices. The curriculum is distinc-

tively interdisciplinary with major emphasis on physical sciences, biological and biomedical sciences, pharmaceutical sciences and professional studies requiring substantial preliminary training in physical and biological sciences. It is administered with the flexibility necessary to accommodate the varying aspirations of individual students as candidates for licensure as Registered Pharmacists and in every way for the important and expanding role of the pharmacist as a health professional. The graduate of the B.S. in Pharm. degree curriculum is qualified and motivated for the practice of clinical pharmacy (community pharmacy and institutional pharmacy), for professional and technical careers in industry and government, and for further study leading to advanced degrees in the pharmaceutical sciences and related physical, biological, and biomedical sciences.

An optional professional education and training program leading to an advanced professional degree (Doctor of Pharmacy) is also offered. This program involves professionally oriented courses in different speciality areas for a selected number of students.

The School offers M.S. and Ph.D. degree candidates and post-doctoral participants course work and research training and experience in the pharmaceutical sciences, especially pharmaceuticals (biopharmaceuticals, physical pharmacy), hospital pharmacy, medicinal chemistry, and pharmacy administration.

Graduate degrees offered through the School of Pharmacy are administered by the Graduate School of The University of North Carolina at Chapel Hill. These degrees include the Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) in pharmaceuticals, medicinal chemistry, hospital pharmacy, and pharmacy administration.

The School also engages in the continuing education of pharmacists and pharmaceutical scientists and technologists, supporting their efforts to adapt to an expanding and dynamic science and technology.

The faculty, staff, and students of the School of Pharmacy are actively involved in research and other scholarly pursuits in the professional, scientific, and technological aspects of pharmacy. Through their work they contribute to the knowledge characteristic of the pharmaceutical sciences, the recording and communication thereof, and its application in the educational and service phases of the School's program.

In the third, or service, phase of the School's threefold mission, the faculty and staff promote the disciplines and support the missions of the pharmacist in clinical practice and the pharmaceutical scientist in industry, government, or elsewhere. This is done particularly by motivating and providing for continuing education at all levels, by innovating and contributing to the development of expanding pharmaceutical services, by engaging in the exploratory research that leads to new and improved pharmaceutical services and new drug products, and in the practical application of the results of their work by the profession and the industry, by contributing to good relations of the pharmacy profession and the pharmaceutical industry with the public and with other health professionals and, in general, by initiating and assisting the programs that will be beneficial to the pharmaceutical services required by a modern society.

The School of Pharmacy was admitted to membership in the American Association of Colleges of Pharmacy in 1917. This organization was formed for the promotion of sound educational programs and productive research and scholarly efforts in pharmacy and the pharmaceutical sciences. It maintains high standards for membership based on the quality of the faculty of its member institutions and the excellence of their instructional programs and their resources for education and research.

The School of Pharmacy of The University of North Carolina is accredited by the American Council on Pharmaceutical Education. The School is also accredited by all State examining boards.

Students are admitted to a three-year program of professional studies in the School of Pharmacy upon completion of at least two years (the prepharmacy years) of collegiate work in the General College of The University of North Carolina or in any accredited liberal arts college (2-3 program) and designated courses. The American Association of Colleges of Pharmacy stipulates for its member schools that students transferring from a college other than another school of pharmacy must complete the required professional courses in proper sequence in the School of Pharmacy for the B.S. in Pharmacy Degree. Each application for admission must be approved by the Director of Admissions of the University and the Committee on Admissions of the School of Pharmacy. An application should be filed as early as possible, preferably before February 1st of the calendar year in which the student desires admission. Applications received later in the year will be given every consider-

ation within the limits imposed for the number of students admitted at an earlier date.

For students who transfer to the School of Pharmacy from another accredited School of Pharmacy, the minimum residence required for the degree is one academic year, that is, two semesters within a twelve month period. Such students must complete at least thirty semester hours while in residence in the School of Pharmacy.

## Pharmaceutical History

On July 1, 1957, Pharmacy Foundation of North Carolina, Inc., established a Research Historianship in the School of Pharmacy to develop the historical records of total pharmacy in North Carolina. Extensive files pertaining to pharmacy and pharmacists are maintained.

**“The School of Pharmacy of The University of North Carolina: A History”** by Alice Noble was published in 1961 by The University of North Carolina Press. Copies may be obtained from the Pharmacy Foundation of North Carolina, Inc., c/o School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27514.

## Loans

**Health Professions Loan Program.** For the past several years the United States Government has made available to the School of Pharmacy funds which support loan programs. Recent experience indicates that these funds may be sharply decreased in the future.

Federal law provides that the Surgeon General shall make grants to each accredited school of medicine, osteopathy, dentistry, optometry, pharmacy, and podiatry for loans to be awarded to eligible students. These loans are available only to students who without this financial assistance would not be able to pursue the required studies. Loans are to be awarded to full-time students who meet the year-class requirements in addition to financial need. Application for these loans is to be made to the Office of Student Aid, Vance Hall. Financial need is determined by that office. Awards are determined by the Committee on Scholarships of the School of Pharmacy. The loan may cover such portion of the cost of the student's tuition, fees, books, equipment, and living expenses as the school finds necessary. Financial eligibility is determined by analysis of the Parents' Confidential Statement.

**N.C. Department of Human Resources Loans.** Pharmacy students who are residents of North Carolina and have successfully completed the freshman year are eligible to apply for loans appropriated by the General Assembly. The student agrees upon (1) completing requirements for the Degree of Pharmacy, and (2) becoming Board registered to repay the loan by practice in North Carolina in either (a) a rural community of 10,000 or less population, or (b) licensed hospitals or nursing homes within the State, (c) State or local public health departments and nonprofit community primary care programs, or (d) a medically underserved urban or rural area not included in a, b, or c but in which there is a need as determined by the Division of Facility Services, for one year for each academic year of assistance. The maximum loan available is \$2,000 per academic year or \$8,000 for a four-year period. Detailed information may be obtained from the State of North Carolina Board for Need-Based Medical Student Loans, Office of State Budget and Management, Medical Student Loan Program, 116 West Jones Street, Raleigh, NC 27611.

**N.C. Rural Rehabilitation Corporation Loans.** Students from farm homes may be eligible for loans to a limit of \$1,000 per year from the North Carolina Rural Rehabilitation Corporation, P.O. Box 2504, Raleigh, NC.

**Edwin H. Smith, Jr., Loan Fund.** Annual loans from the Edwin H. Smith, Jr., Loan Fund, of up to \$2,000 are available to students who have been residents of Halifax County for at least two years and who are enrolled in the curriculum at the UNC School of Pharmacy. Interest is at 2 percent; loans are payable within four years after graduation. Application should be made to the Edgecombe Bank and Trust Company, P.O. Box 1259, Tarboro, NC 27870.

**National Association of Retail Druggists Loans.** Pharmacy students are eligible for loans to cover tuition, fees, and books not exceeding \$500 per semester from the National Association of Retail Druggist's Foundation, National Headquarters Building, 205 Daingerfield Road, Alexandria, Virginia 22314. Loans are made only to complete the three years of pharmaceutical education. The applicant must be recommended by the dean of the School of Pharmacy. Two cosigners are required. The loan is free of interest and is repayable in reasonable monthly installments after graduation. The loan, however, becomes payable immediately if the student withdraws from the School of Pharmacy for any reason whatsoever.

**The North Carolina Pharmaceutical Association Scholarship Loans.** The N.C. Pharmaceutical Association makes available a number of short term tuition loans which do not usually exceed

\$300 per semester and which bear no interest. Application is made to A. H. Mebane III, Institute of Pharmacy, P.O. Box 151, Chapel Hill, NC 27514. These loans are restricted to members of the Student Branch of the N.C. Pharmaceutical Association. The maximum of such loans to a student is \$1800. Repayment must begin within six months of graduation from the School of Pharmacy or termination of pharmacy studies.

**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 two or more courses in a degree program, and demonstrate financial need.

## UNDERGRADUATE SCHOLARSHIPS

The scholarships that follow are awarded to worthy and needy students of pharmacy who subscribe to the requirements of the donors. A "C" or better average must be maintained each semester in order to be eligible for most of these scholarships throughout the year. Application for a scholarship must be submitted to the Office of Student Aid before March 1. Financial need is determined by the Office of Student Aid. Scholarship awards are determined by the Committee on Scholarships of the School of Pharmacy.

The values of these scholarships range from \$200 to \$1,000 per year. The tenure of these scholarships is one year, provided the recipient maintains a "C" average. Application must be made each year, as set forth above, for any scholarship.

**The David Astor Dowdy Pharmacy Scholarship.** Established in 1948. Endowed by the Mann Drug Stores of High Point. The fund maintains a number of pharmacy scholarships annually. The tenure of the scholarship is for one year, provided the holder of the award maintains high standards both in character and in scholarship, but it may be renewed each year until graduation at the end of three years. The basis for selection shall be high scholastic rank, character, promise of professional aptitude, and financial need.

**The Justice Drug Company Scholarships.** Three in number. Established in 1931 by the Justice Drug Company of Greensboro.

**The William Julius and Vivian Spradlin Smith Scholarship.** Established in 1932 by the Women's Auxiliary of the North Carolina Pharmaceutical Association as a loan fund. In 1946 it was converted to

an endowed scholarship and named to honor Vivian Spradlin Smith. In 1977, at the request of Mrs. Smith, and to honor Mr. Smith's approaching retirement as Executive Director of the N.C. Pharmaceutical Association, it was retitled to include Mr. Smith's name. This scholarship is given annually to a deserving pharmacy student who shows both need and ability.

**C.B. Miller Memorial Scholarship.** Established in 1945 by Mr. B. R. Ward of Goldsboro, in memory of Mr. C. B. Miller, of Goldsboro.

**The McKesson & Robbins Scholarships.** Two in number. Established in 1955 by McKesson & Robbins, Inc. of Charlotte.

**The Eckerd Scholarships.** Four in number. Established in 1957 by the Eckerd Drug Stores and continued by the Jack Eckerd Corporation.

**The North Carolina Mutual Wholesale Drug Company Scholarships.** Two in number. Established in 1960 by the North Carolina Mutual Wholesale Drug Company of Durham. Intended for students who will pursue a career in community pharmacy.

**Lucile Swaringen Rogers Scholarship.** Established in 1966 by the Women's Auxiliary of the N.C. Pharmaceutical Association. This scholarship is given annually to a deserving pharmacy student who shows both need and ability.

**Vivian Spradlin Smith Scholarship.** Established in 1978 by the Women's Auxiliary of the North Carolina Pharmaceutical Association and given annually to a deserving pharmacy student who shows both need and ability.

**The Hall Scholarship.** Established in 1976 by Mr. J. B. Clay of Oxford in honor of John Perry Hall and Samuel Cannady Hall. An annual stipend of \$500 to be awarded either as a single scholarship or two small scholarships.

**The Pharmacy Foundation of North Carolina, Inc., Scholarship.** Number varies. In recent years these funds have been utilized as matching funds for the federal grants which provide the health professions loans.

**The George T. Cornwell Scholarship Fund.** Number varies. Established in 1981 by Mr. George T. Cornwell. Awards are approximately equal to tuition and fees for two semesters.

## Registration

All students are expected to present themselves for registration in accordance with the plan of registration established for the current year. A student registering for the first time will report for a

physical examination to the Infirmary and present at registration a clearance card from the Director of Student Health Services. Failure to attend to this matter before registration causes extra expense to the University and entails for the student the payment of an extra charge of five dollars (\$5.00).

Students who expect to register for the first-year class should be in Chapel Hill in time for the first Orientation meeting. The time between this date and formal registration is devoted to placement tests and to a systematic plan of acquainting new students with their surroundings. All students begin their registration with their advisers in Beard Hall.

Registration for credit for any course is limited to the first three full days of instruction in a semester, unless the late registration is approved by the instructor concerned and the Dean.

The listing of a course in the catalog does not obligate the University to give the course in any particular year.

Changes in registration are limited to the first three days of a semester.

## **Attendance Regulations**

“Regular class attendance is a student obligation, and a student is responsible for all the work, including tests and written work, of all class meetings. No right or privilege exists which permits a student to be absent from any given number of class meetings.

If a student misses more classes than the instructor deems advisable, the instructor will report the facts to the Office of the Associate Dean for appropriate action. Instructors should explain their attendance regulations during the first week of every class and report promptly to the Office of the Associate Dean the name of any student who exceeds the number of absences deemed advisable. If the student misses without excuse more classes than the instructor deems advisable, the instructor may request that the Dean drop him from the course with a grade F.

The appearance of a student's name on the Infirmary List constitutes an excuse for the student for absences from classes during the period the student is in the Infirmary. This list is circulated to the School of Pharmacy, and, in cases of doubt, the instructor may check with the Dean's office.

Students who are members of regularly organized and authorized school activities and who may be out of town taking part in

some scheduled event are to be excused during the approved period of absence.

Absences from class for valid reasons are excused only by the instructors. A student should present the explanation for any absences to his instructor at the next meeting of the class."

## Final Examinations

Regular written examinations are required at the end of each term in all courses except those whose nature makes written examinations unnecessary.

Special examinations for students who have been excused by the instructor from regular examinations on account of sickness or at the September period, or at a regular term examination period may be held at suitable times fixed by the Office of Records and Registration and the instructors concerned. Such examinations must be taken within twelve months from the date of absence.

To be entitled to take a special examination within a term, or at the September period, or at a regular term examination period, the student is required to file a written request with a recorder in the Office of Records and Registration at least one week before the time for the examination.

Students absent from an examination without an excuse, or present and failing to submit examination papers, are reported absent. This mark is equivalent in every respect to grade F, or failure, and is so recorded in the Office of Records and Registration.

Each student is required to subscribe his name on the following pledge or its equivalent on every paper: "I hereby certify that during this examination I have neither given nor received aid." The instructor will not report a grade for any student whose examination paper lacks this pledge.

Papers handed in at a special examination by students who have been excused by the instructor from the regular examination will be graded by the usual system; all others will be marked **passed** or **failed**.

By action of the faculty, quizzes are not to be given during the last five days of instruction of any term.

## Standing

For undergraduates, the permanent grades are **A** (highest level of attainment); **B** (high level of attainment); **C** (adequate level of attainment); **D** (minimal passing level of attainment); **PS** (passed on

the “Pass-Fail” option); and **F** (failed—unacceptable performance). The temporary grades are **AB** (absent from examination and **IN** (work incomplete). Temporary grades are calculated as **Fs** until and unless they are converted to permanent grades. Conversion must occur within 12 months from the date of assignment of the temporary grade.

## **Rank of Classes**

The student policies are provided in detail in “Administrative Procedures and Policies for Students of the School of Pharmacy.” Each student receives a copy upon admission.

A student must attain a grade of D or better to pass any course.

The right of appeal to the Committee on Petitions of the School of Pharmacy is allowed with respect to grading, provided the appeal is made within three months.

Any student who is denied promotion or readmission but who offers evidence of extenuating circumstances is permitted to make a written and personal appeal to the Committee on Petitions. The Committee will meet each year at a time to be designated by the Dean to consider petitions of students who have definite and convincing reasons on which to base a request for readmission.

## **Academic Eligibility and Progression**

The University and the School of Pharmacy expect all students to study and perform to the best of their abilities. The eligibility standards listed below do not suggest acceptable academic performance, but rather minimum levels. Students failing to meet these standards are not making good use of their educational opportunities. The standards indicated below are stated in terms of “good standing” (cumulative grade point average) and “satisfactory progress toward graduation” (cumulative academic semester hours passed).

The School’s Progression Review Board will monitor student progression through the B.S. in Pharmacy degree program. With the concurrence of the Faculty of the School, this Board may devise and enforce recommendations for remedial activity for any student who fails to maintain satisfactory progress as defined in this section. This Board, with concurrence of the Faculty of the School, also may drop from the School any student who does not maintain satisfactory progress.

A student who enters the School of Pharmacy after May 15, 1982, must meet the following minimum requirements:

A student must maintain a 2.000 grade point average in order to progress through the B.S. in Pharmacy degree program. The foregoing statement applies to any prepharmacy requirements which are attempted while enrolled in the School of Pharmacy as well as to courses in the professional curriculum. Allied Option and Professional Option courses are part of the professional curriculum.

If a student's cumulative grade point average (as defined above) drops below 2.000 at the end of any semester, he will be placed on academic probation. The student must then regain a 2.000 grade point average by the end of the next regular semester (Fall, Spring) in order to continue in the program. A student may not begin any given course until he has completed all its prerequisite courses with a grade of "D" or better.

According to University regulations, each student must maintain satisfactory progress toward completion of his particular requirements for graduation. In the B.S. in Pharmacy degree program, that minimum progress will be:

2.000 cumulative grade point average and 28 academic semester hours to begin a third semester in residence.

2.000 cumulative grade point average and 56 academic semester hours (cumulative) to begin a fifth semester in residence.

2.000 cumulative grade point average and 80 academic semester hours (cumulative) to begin a seventh semester in residence, if graduation has not occurred at the end of the sixth semester in residence.

Students who do not earn at least a 1.000 grade point average and pass nine academic hours in any semester will be reviewed by the Progression Review Board to determine their academic eligibility.

If a student becomes ineligible for the first time, he is placed on probation. If a student does not regain eligibility during the probationary period, or if he becomes ineligible a second time, his case must come before the review board for evaluation and disposition. The probationary period for students at the end of a fall semester will be the next spring and summer sessions; for students at the end of a spring semester, it will be the next summer and fall session.

The review board will determine whether or not the student will be allowed to continue in the B.S. in Pharmacy Degree Program, and, if the student is allowed to continue, specific conditions for continuance in the program will be determined. Eligibility may be regained by: (1) repetition of professional curriculum courses in which the student has received a grade lower than "C" (when repeating courses, student must attain a grade of "C" or better), and/or (2) taking other professional curriculum courses for which the student has completed the prerequisite courses. If a student fails a professional course, he must repeat the course to get a minimum grade of "C." If a student makes a "C" or higher in a professional course, he cannot repeat the course for a letter grade.

A student will not be allowed to register for Pharmacy Practice 92L (Off-Campus Academic Externship Program) until his cumulative grade point average is 2.0.

In view of its responsibility to the public, the pharmacy faculty reserves the right to drop a student from the School at the end of any semester providing he does not in its judgment show sufficient promise to justify continuing the study of pharmacy regardless of his grades.

## **Restoration of Academic Eligibility**

Academic eligibility may be restored by:

1. taking professional and allied option courses in the Summer Sessions at The University of North Carolina at Chapel Hill;
2. taking allied option courses through the Independent Study by Extension Program (correspondence) at The University of North Carolina at Chapel Hill;
3. removing excused AB or IN grades within one calendar year after the grades are awarded;
4. repeating professional courses as specified by the Progression Review Board.

## **Requirements for Graduation**

A "C" average, corresponding to a quality point average of 2.0 is required for graduation with the Degree of Bachelor of Science in Pharmacy. A "C" average is required also in professional courses to qualify for graduation; professional courses include all work taken in the last three years of the Pharmacy curriculum.

Beginning in the Fall Semester, 1978, and subsequent semesters, quality points are earned as follows: A = 4.0; A- = 3.7; B+ = 3.3; B = 3.0; B- = 2.7; C+ = 2.3; C = 2.0; C- = 1.7; D+ = 1.3; D = 1.0; F = 0. The calculation of the quality point average is based only on the work taken at this University; grades transferred from another institution are not included in the calculation.

## **Withdrawals**

If a student wishes to withdraw at any time other than the end of a semester, a formal withdrawal which is prerequisite to honorable dismissal or re-entrance to this institution must be approved by the Dean's Office in order to be valid. Such a withdrawal will be approved only after full investigation of the circumstances and after the lapse of twenty-four hours from the time the first application is filed with the Dean. The withdrawal form after approval by the Dean or Associate Dean must be filed promptly with the Office of Records and Registration, 1 Hanes Hall.

If a student withdraws after midterm and is reported as below passing in two or more courses, that will be counted as a semester in residence in all computation of his requirements for readmission. If a student withdraws before midterm, it will be left to the discretion of the Dean's Office whether that semester is to be counted as a semester in residence. The Dean's decision will be indicated specifically on the form used for withdrawal. Students withdrawing from the School of Pharmacy may lose the privilege of re-entering at a certain time, since the numbers admitted to classes are limited.

In case of withdrawal from the University, tuition and fees will be prorated over a period of nine weeks at a rate of one-tenth of the semester's bill after deduction of a \$25.00 administrative charge. The last date for credit on a student's financial account for withdrawal is nine weeks after registration.

## **PHARMACY DEGREE PROGRAMS**

### **Degree of Bachelor of Science in Pharmacy**

To be recommended for the degree of Bachelor of Science in Pharmacy the student must have completed the five-year course of study outlined on pages 39-40. A minimum residence of three years in The School of Pharmacy is required except for students

who transfer from another school of pharmacy with advanced standing in professional courses (minimum residence of one year as given under the **General Statement**, page 28).

The School of Pharmacy recognizes that its graduates may elect to pursue one or another of a number of related but definitely different forms of pharmaceutical practice. They may practice clinical pharmacy in community pharmacies as proprietors or employees. They may also practice pharmacy in hospitals or other medical care institutions. The graduate of the School of Pharmacy is also in demand in the various divisions of the pharmaceutical industry: research, development, production, control, and marketing. Positions are open to the graduate in various government agencies, for example, the United States Public Health Service and the Veterans Administration. Certain subject matter, however, is basically necessary regardless of the careers which the student may expect to follow after graduation. Students, particularly those considering graduate study, who are interested in specialization should consult the Dean before registering for elective courses. The curriculum is given on pages 39-40. Statements about graduate work are given on pages 26 and 27.

## REQUIREMENTS FOR ADMISSION

### Freshman and Sophomore

Applicants may be admitted to the General College for the two years of study (prepharmacy), provided they meet the requirements for entrance. Application blanks for admission may be secured by writing to the Director of Admissions, The University of North Carolina at Chapel Hill, who upon approving the application will undertake to secure directly from the proper high school official an appropriate certificate of the applicant's record.

A nonrefundable application fee of \$15.00 must be submitted with the application for admission. An applicant who has been offered admission reserves his or her place by the payment of \$25.00 nonrefundable deposit which is credited toward the first semester's tuition.

Freshmen are admitted to the General College by certificate from accredited schools or by examination, and they must show satisfactory scores on an entrance examination consisting of the College Entrance Examination Board. **The Dean of the School of Pharmacy**

**should be advised when formal application for admission is made to the Director of Admissions.**

Admission to the General College is ordinarily based on the completion of four years of high school or preparatory school work and acquisition of sixteen or more units of credit according to the following distribution:

English . . . . .	4 units	A Natural Science . . . . .	1 unit
History of the United States . . . . .	1 unit	Latin, German, French or Spanish . . .	2 units
Algebra . . . . .	2 units	<sup>2</sup> Electives to make total of . . . . .	16 units
Plane Geometry . . . . .	1 unit		

Registration in the prepharmacy curriculum on the UNC at Chapel Hill campus or elsewhere does not automatically assure the student of a place in the third-year class of the School of Pharmacy. Enrollment is limited and students must be selected on a competitive basis. Final selections of students are made by the Admissions Committee of the School of Pharmacy which is composed of faculty members and students and is charged with the responsibility of selecting eligible students. Scholarship, character, industry, entrance examination scores, and priority of application are governing factors for admission. In addition, all students must complete the Pharmacy College Admission Test (PCAT) for consideration for admission.

## Transfer Students

Candidates for admission as transfer students with third-year standing must have credit for the courses in the two-year prepharmacy curriculum. Transfer students are required to submit transcripts of their college work at the time of their formal application for admission. Each application for admission or readmission must be approved by the Director of Admissions at the University before the application can be considered by the Committee on Admissions of the School of Pharmacy. Applicants for admission as transfer students may be requested to appear at the School of Pharmacy for a personal interview. All applications should be filed as early as possible in the period before December 1. No applications will be reviewed by the Admissions Committee if received after March 1.

2. Of the 5 elective units counted in the total of 16, not more than 4 may be vocational subjects. Experience has shown that physics and typing are some useful electives for prospective pharmacy students.

## Readmissions

A student leaving the University with an academic deficiency must restore his eligibility before applying for readmission as a regular student. Restoration of eligibility may only be accomplished by enrolling at The University of North Carolina at Chapel Hill in summer sessions or through correspondence instruction from this campus.

Students who have become academically ineligible on more than one occasion will not be considered for readmission.

## Industrial Trip

A planned visit is scheduled during the Fourth year to one of the major pharmaceutical industrial plants. This trip is designed to introduce the students to an educational experience involving modern methods of research, quality control, production, and marketing of pharmaceuticals. Students are required to participate in this trip and they are encouraged to plan in advance for it.

## Pharmacy Experience

The requirements for licensure as a pharmacist in North Carolina provide that the candidate must submit satisfactory evidence of at least 1500 hours of practical pharmacy experience under the supervision of a licensed pharmacist in a program approved by the North Carolina Board of Pharmacy. The structure of the practical pharmacy experience program necessary to meet requirements is described in the **Extern/Internship Program Instructions** of the North Carolina Board of Pharmacy. Such experience may be acquired in a community or hospital pharmacy. Up to 600 hours of experience credit may be acquired concurrent with college attendance when gained in an approved pharmacy course or project. No practical experience can be credited prior to completion of two years of college work.

In order to validate any practical experience, it is necessary for the candidate to register with the North Carolina Board of Pharmacy within five days of the time he begins his practical experience training and to discharge the requirements of a program of supervised experience. The Board of Pharmacy will not allow credit for claims of practical experience required under the pharmacy laws unless such claims can be corroborated by records on file in the Board office showing the beginning and ending of each period of practical experience claimed as supplied by the applicant during his

training period and by the pharmacist who supervised the practical experience. Full details may be secured from the North Carolina Board of Pharmacy, 209 Carr Mill Mall, P.O. Box H, Carrboro, NC 27510.

## Requirements for Two-Year Prepharmacy Program<sup>1, 2</sup>

	Minimum Credits (semester Hours)
English Composition	6
Mathematics	6 <sup>3</sup>
General Zoology with Laboratory	4
Fundamentals of Human Anatomy & Physiology with Lab	4
Physics with Laboratory	6-8 <sup>4</sup>
General Chemistry with Laboratory	8
Organic Chemistry with Laboratory	6-8 <sup>5</sup>
General Education Perspective Courses	15 <sup>6</sup>
Foreign Language	6-12 <sup>9</sup>
Economics	3 <sup>7</sup>
Physical Education Activities	2

(Course descriptions found in the UNC at Chapel Hill Undergraduate Bulletin may be helpful in determining the equivalent of courses at other institutions.)

1. This curriculum applies for admission to the School of Pharmacy in the Fall Semester, 1984, and thereafter.
2. No less than 62 semester-hour credits, exclusive of physical education activities, are required for entry into the professional pharmacy program.
3. This is to include at least 3 semester-hour credits of calculus (UNC at Chapel Hill - Math 31). Introductory courses in Statistics or Computer Science are also particularly recommended. Other suitable UNC at Chapel Hill courses are Math 30 (not to be taken *after* calculus), Math 2, 32; Statistics 11c, 23; Comp 14.
4. This is to include all topics traditionally included in an introductory college physics course. At most institutions this will require two one-semester courses with laboratory.
5. This is to include all topics traditionally included in an introductory college organic chemistry course. At most institutions this will require two one-semester courses with laboratory. If time permits, a course in quantitative chemical analysis is also highly recommended.
6. These five courses are to be selected from the listed General Education Perspective Courses, and are to be distributed as herein indicated.
  - 2 courses —Aesthetic Perspective
  - 2 courses —Western Historical/Non-Western/Comparative Perspective
  - 1 course —Philosophical Perspective

Note: All students must satisfy the Foreign Language requirement by two semesters (same language studied in high school). This may be accomplished by examination or by completing college courses. If other than high school language is taken in college, three semesters must be completed. One Aesthetic Perspective course may be replaced by a required foreign language course, *and* one Western Historical/etc. Perspective course may be replaced by a second required course in the same foreign language.

7. Economics 10 is a required course from the Social Sciences Perspective.

### Three-Year Professional Program (Leading to B.S. in Pharmacy Degree)

	Lec.	Lab.	Cred.		Lec.	Lab.	Cred.
Bact. 51.....	3	2	4	Med. Chem. 66.....	4	0	4
Physiol. 93.....	3	2	4	Pharmacy 48.....	3	3	4
Phar. Prac. 21.....	1	0	1	Pharmaceutics 53..	3	0	3
Pharmaceutics 52...	3	0	3	Pharmaceutics 53L.	0	3	1
Pharmaceutics 52L..	0	3	1	Phar. Prac. 75.....	4	0	4
Med. Chem. 65.....	2	0	2		14	6	16
Pharmaceutics 51...	1	0	1				
	13	7	16				
Pharmacology 55...	3	0	3	Phar. Admin. 96....	3	0	3
Phar. Admin. 90.....	3	0	3	Pharmacology 56...	3	0	3
Med. Chem. 68.....	3	0	3	*Pharmaceutics 72L.	0	3	1
Phar. Prac. 76.....	4	0	4	Med. Chem. 69.....	3	0	3
Pharmaceutics 54...	3	0	3	Phar. Prac. 77.....	4	0	4
	16	0	16	Phar. Admin. 99....	2	0	2
					15	3	16
<b>Fall or Spring</b>				<b>Fall or Spring</b>			
Professional and				*Pharmacy Practice..	0	40	12
Allied Options.....	12	0	12	92L			
"Free Elective".....	3	0	3		0	40	12
	15	0	15				

#### Advanced Standing Credits

Applicants to the first year of the professional pharmacy program may be granted transfer credit for two courses required in the professional program if they have completed similar courses elsewhere. These courses are:

Bacteriology 51 - an introductory course in microbiology with laboratory.

Physiology 93 - an introductory course in human physiology, to be taken after completion of the fundamentals of human anatomy and physiology.

#### General Education Perspective Courses

Aesthetic Perspective (two courses, one in literature and one in fine arts)

#### Fine Arts

Art 30, 31, 32, 33, 35, 36, 37, 38, 44, 46

Dramatic Art 15

English 42

Music 21, 31, 40, 44, 45

Religion 39

\*Students will be divided into two sections. One-half of the Fourth Year class will be assigned to Pharmaceutics 72L in the Spring Semester of the Fourth Year and will be assigned to Pharmacy Practice 92L in the Fall Semester of their Fifth Year. The other half of class will take Pharmaceutics 72L in the Fall Semester of the Fifth Year and Pharmacy Practice 92L in the Spring Semester of the Fifth Year. (Pharmaceutics 72L is a prerequisite for Pharmacy Practice 92L.)

**Literature**

Classics 30, 31, 33, 35, 36, 61, 62

Comparative Literature 21, 22

English 20, 21, 22, 23, 23W, 24, 25, 25W, 26, 28, 29, 29W

French 21

German 21, 40, 41

Italian 41, 42

Portuguese 35, 40

Religion 38, 55, 94

Russian 70, 74, 50

Spanish 21, 35, 40, 46

Speech 41

Philosophical Perspective (one course)

Economics 59

Philosophy 1, 20, 22, 31, 32, 37, 38, 41, 42, 43, 44, 46, 56, 57, 58, 59, 60, 64

Political Science 61, 63, 64

Religion 21, 22, 30, 35, 37, 58, 68

Sociology 50

**Social Sciences Perspective**

Economics 10 (required for prepharmacy)

Western Historical/Non-Western/Comparative Perspective (two courses, one in Pre-1700 Western History and one from any of the categories)

**Pre-1700 Western History**

Afro-American Studies 40

Classical Archaeology 40, 41, 42

Classics 44

History 5H, 11, 41, 42, 44, 52, 53, 56

Religion 24, 27, 56, 59

**Other Western History**

Afro-American Studies 41

American Studies 20

Economics 36

History 6H, 7H, 8H, 12, 16, 21, 22, 31, 45, 48, 49, 14H

Religion 29

Speech 63

**Non-Western Comparative**

African Studies 40

Anthropology 26, 36, 42, 55

History 15, 23, 24, 25, 26, 27, 28, 30, 46, 47, 13H

Political Science 50, 57, 59, 60

Religion 10, 20, 40, 46, 76, 77

Sociology 11

**Professional Electives** (minimum two courses from this list)

Pharmacy 104, 106, 162, 171, 172, 182  
Pharmacy Practice 78, 94, 108, 109, 110, 134, 135, 136, 132, 175  
Pharmacy Administration 93, 97, 98, 190  
Medicinal Chemistry 121, 141, 142, 151, 152, 153, 160, 164

**Allied Electives** (no more than two courses from this list to meet the requirement in "professional and allied options" in 5/5 year)

Anthropology 170  
Bacteriology 100, 110, 115, 130, 180  
Biochemistry 104, 105, 130, 140  
Biostatistics 101, 105, 106, 108 (111)  
Business Administration 130, 140, 144, 150, 160, 161, 163  
Chemistry 144, 145, 146, 147, 160, 166, 168, 180, 181, 182  
Computer Science 14  
Economics 70, 150  
Environmental Science 110  
Epidemiology 160, 162  
Geography 145  
Health Administration 105, 158  
Nutrition 110  
Parasitology 134  
Pharmacology 118, 123  
Philosophy 44  
Physical Education 88  
Physiology 140  
Psychology 80  
Zoology 100, 101, 102, 104, 110, 120, 121, 122, 125

## **Doctor of Pharmacy (Pharm.D.) Program**

The purpose and objectives of the professional degree program are to prepare an advanced pharmacy specialist who can effectively cope with the complex problems in the delivery of comprehensive pharmaceutical health care; who possesses both the knowledge and skills necessary to function as an authority in the clinical use of drugs; who can apply pharmaceutical and biomedical sciences to the practical problems of drug therapy; who is motivated to participate in the interdisciplinary delivery of health care; and who can function as an easily accessible health care informant and educator for drug therapy.

While there continues to be need for baccalaureate level pharmacists, the emerging role of the pharmacist in the clinical setting has brought demands for exceeding the baccalaureate level.

The Pharm.D. pharmacist emphasizes the clinical application of scientific and pharmaceutical information into pharmacy practice as it pertains to patient care.

Recognizing the need in North Carolina for pharmacists with a professional degree and realizing the inability of the existing health care system to use more than a small percentage of pharmacists at the professional degree level, The UNC School of Pharmacy Pharm.D. Degree Program is restricted to a maximum of 15 students per year. These students will be given reasonable opportunities to introduce a new pharmacy expertise in an evolving interprofessional system of health care delivery. Our immediate goals must be centered on practical needs for contemporary services, but our long-range goals must lead us toward a greater level of sophistication in the evolving health care system through the adoption, on a limited scale, of the professional degree program.

The adoption of a professional degree program is the response of pharmacy education to the demands of the rapidly changing health care delivery system to provide an individual who possesses comprehensive knowledge and a higher level of sophistication in the profession of pharmacy.

The Pharm.D. Program is consistent with the University's mission to educate and train students to achieve the highest level of skills and competencies. It is also consistent with the School of Pharmacy's mission to provide clinical pharmacy training as a requirement for accreditation.

## **Requirements and Curriculum**

The Pharm.D. Program is an optional professional degree program that is available for students enrolled in the Bachelor's curriculum. Students in their second year of study can apply to the Pharm.D. curriculum, and if accepted, the students will be enrolled in a two-year Pharm.D. program. Applicants who have already been granted a Bachelor of Science Degree in Pharmacy are also eligible to apply.

The curriculum is designed to specifically provide knowledge in medically related sciences which relate to clinical utilization of drugs and to assure comprehension of this knowledge.

The students will rotate through a number of settings to bring to their education a broad spectrum of practice. The students may rotate through the Drug Information Center, Clinical Pharmacology, Pediatrics, and Adult Medicine Services. Additionally, time will be spent in special areas of interest such as Cardiology, Endocrinology, Hematology, and Ambulatory Care Centers. The general philosophy will be to expose students to a broad range of practices and their

problems and to develop solutions to these problems.

The course of study will encompass a minimum of four full semesters and one summer (20 consecutive months and 70 credit hours). All students, whether they have been admitted to the program after four or five years of study, must complete the entire complement of required coursework.

Employment opportunities for graduates of a professional degree program exist in: 1) nonteaching hospitals and institutions, 2) teaching hospitals, 3) AHEC pharmacies, 4) prescription centers, group practices, and clinics, 5) health maintenance organizations, 6) schools of pharmacy, and 7) Public Health Service.

## Courses

Coursework for the Pharm.D. Program is listed and summarized below. Students who are accepted after their fourth year at UNC at Chapel Hill School of Pharmacy will also be required to take Pharmacy Practice 92L, a nine-credit course, the summer after their fourth year.

## Tuition and Fees for Each Semester

Current tuition and fee rates for North Carolina residents and nonresidents in the Pharm.D. Program are summarized below. These rates are subject to change based upon modifications made by The University of North Carolina Board of Governors.

### Fall or Spring Semester

	Resident	Nonresident
Tuition	\$486.00	\$1,395.00
Fees	<u>130.75</u>	<u>130.75</u>
Total	\$616.75	\$1,525.75

### Each Summer Term

Tuition	\$194.00	\$558.00
Fees	<u>44.50</u>	<u>44.50</u>
Total	\$238.50	\$602.50

For further information regarding the Pharm.D. curriculum and applications process, please contact Dr. Ralph H. Raasch, UNC at Chapel Hill, School of Pharmacy, Beard Hall — 200H, Chapel Hill, NC 27514.

## Curriculum Leading to Doctor of Pharmacy Degree

Students will be accepted for this program after their fourth year at UNC at Chapel Hill, or a B.S. in Pharmacy Degree program from UNC or another school of pharmacy.

### First Summer

Pharmacy 92L - modified to include a Community, Hospital, and Clinical Pharmacy Externship for 12 weeks for 9 semester hours. (Only for students admitted after their fourth year at UNC School of Pharmacy. All other students begin in the Fall Semester.)

### First Year - Fall Semester

	Lec	Lab	Cred
PhPr 178 - Drug Information Retrieval & Analysis	1	3	2
PhPr 176 - Advanced Clinical Pharmacy	0	10	6
PhAd 179 - Drugs in Health Care	3	0	3
Bios 105 - Principles of Statistical Inference	3	0	3
PhPr 132 - Seminar	1	0	1
	<hr/>	<hr/>	<hr/>
	8	13	15

### First Year Spring Semester

	Lec	Lab	Cred
PhPr 175 - Iatrogenic Disease	3	0	3
PhPr 177 - Advanced Clinical Pharmacy	0	10	6
Pharmacy 182 - Clinical Pharmacokinetics	3	2	4
Phar 156 - Clinical and Analytical Toxicology	3	0	3
PhPr 133 - Seminar	1	0	1
	<hr/>	<hr/>	<hr/>
	10	12	17

### Second Summer

	Lec	Lab	Cred
PhPr 179 - Monitoring Drug Therapy	2	2	3
PhPr 194 - Clinical Pharmacy Clerkship	0	27	9
	<hr/>	<hr/>	<hr/>
	2	29	12

### Second Year - Fall Semester

	Lec	Lab	Cred
PhPr 195 - Clinical Pharmacy Clerkship	0	36	12
PhPr 132 - Seminar	1	0	1
	<hr/>	<hr/>	<hr/>
	1	36	13

### Second Year - Spring Semester

	Lec	Lab	Cred
PhPr 196 - Clinical Pharmacy Clerkship	0	36	12
PhPr 133 - Seminar	1	0	1
	<hr/>	<hr/>	<hr/>
	1	36	13

## PROFESSIONAL OPTIONS FOR PHARM.D. STUDENTS

### Pharmaceutics

Pharmacy 104	Toxicology and Drug Abuse (3)
Pharmacy 106	Radiopharmaceuticals (3)
Pharmacy 106L	Radiopharmaceuticals Laboratory (2)
Pharmacy 162	Pharmaceutical Technology (3)

### Pharmacy Practice

Pharmacy Practice 94	Institutional Pharmacy Practice (3)
Pharmacy Practice 203	Metabolic Management of the Hospitalized Patient (2)
Pharmacy Practice 192	Research Methods in Pharmacy Practice (3)

### Pharmacy Administration

Pharmacy Administration 180	Pharmaceutical Marketing and Economics (3)
-----------------------------	--

### Medicinal Chemistry

Medicinal Chemistry 151	Biomedical Chemistry (3)
Medicinal Chemistry 153	Basic Concepts of Cancer and its Therapy (3)

### Allied Options

Biostatistics 145	Principles of Experimental Analysis (3)
Parasitology 134	Human Parasitology (4)
Pharmacology 107	Introduction to Neurobiology (3)
Pharmacology 123	Behavioral Pharmacology (3)
Biochemistry 140	Clinical Chemistry (3)
Pharmacology 90	Introduction to Neurobiology (3)
Pharmacology 106	Current Concepts in Molecular Endocrinology (2)
Pharmacology 118	Neuroendocrinology (2)

## Graduate Work in Pharmacy

The degrees of Master of Science and Doctor of Philosophy will be conferred upon students who have completed satisfactorily approved graduate work extending over not less than one year for the master's degree and not less than three years for the doctor's degree. Students will be considered for admission to graduate study only if they satisfy the requirements of the Graduate School and have a B.S. degree in pharmacy, chemistry, or the biological sci-

ences from an accredited college or university. A brief description of the major fields of study follows. The minor fields of study may be selected with the departments of the University.

## **Hospital Pharmacy**

A combined graduate program residency in Hospital Pharmacy is offered. The residency program is accredited by the American Society of Hospital Pharmacists. This program offers the opportunity to specialize functionally in various areas of pharmacy practice during the second year of the program.

The program requiring 24 months to complete leads to a Master of Science degree in pharmacy with specialization in pharmacy practice and a certificate of residency. During the summer months, the student spends full time working in the various activities associated with the hospital pharmacy. From September to May, the student spends half-time in his graduate work and half-time in the residency. The program begins July 1.

The program's pharmacy practice philosophy is to provide a broad scope of pharmacy services. Because of continuous emphasis on developing new pharmacy services, the resident has an opportunity to be involved in their implementation.

This opportunity to participate in the implementation of new programs is a unique and valuable experience for future practitioners. The student is also expected to participate in the teaching program of the School of Pharmacy. This provides an opportunity to develop teaching skills, a very important aspect of future pharmacy practice.

## **Medicinal Chemistry**

This program leads to the Master of Science and Doctor of Philosophy degrees granted by the Graduate School of The University of North Carolina.

The field of medicinal chemistry is interdisciplinary. It applies and extends the concepts of chemistry, biochemistry, and pharmacology to the investigation of biomedical problems such as the relationship between molecular structure and biological activity. The graduate student has the opportunity for interdisciplinary cooperative research. The Medicinal Chemistry program benefits from relations with the Research Triangle Institute (especially the Chemistry and Life Sciences Laboratory), the Burroughs Wellcome Research Labo-

ratories, and the Oak Ridge Associated Universities in Oak Ridge, Tennessee.

Facilities are available for graduate instruction and research in the building occupied by the School of Pharmacy. In Medicinal Chemistry, research programs are being conducted in synthetic and natural products with special implications to neurochemistry, enzymology, drug mechanisms, drug metabolism, lipid chemistry, radioactive labeling, cancer chemotherapy, and biomedical mechanisms.

## **Pharmaceutics**

Graduate programs in Pharmaceutics lead to a Master of Science or Doctor of Philosophy degree awarded by the Graduate School. Students may elect a program concentrating in pharmacokinetics and biopharmaceutics, physical pharmacy, radiopharmacy, or pharmaceutical technology. The graduate student in Pharmaceutics has a close association with all of the Pharmaceutics faculty and students, and frequent contact with those of other disciplines in the School. Interactions also exist with the clinical faculty of the Medical School and North Carolina Memorial Hospital, and the local pharmaceutical industry.

All students, regardless of the area of specialization within the Pharmaceutics Division, take a required series of "core" courses, designed to develop a high level of knowledge in the basic sciences.

Job openings in both academia and industry for students trained in Pharmaceutics are excellent and expected to so continue in the foreseeable future.

## **Pharmacy Administration**

The graduate program in Pharmacy Administration offers a program leading to the Master of Science degree and is seeking the approval of a Ph.D. degree.

Pharmacy administration is one of the major disciplines taught in pharmacy schools throughout the United States. It expands the skills learned in the behavioral and administrative sciences that are related to pharmacy practice. The goal of the graduate program in Pharmacy Administration is to provide advanced training to individuals with a professional pharmacy degree that they might apply the principles and methods of the behavioral and administrative

sciences to issues and problems of pharmacy. A person with a degree in Pharmacy Administration will maintain a continued interest in the problems vital to pharmacy and could contribute significantly to its better development.

Students entering the graduate program in Pharmacy Administration at The University of North Carolina at Chapel Hill have the opportunity to obtain exposure to highly rated, excellent schools such as Business, Public Health, Economics, Statistics, and Sociology. The student also has access to excellent computer facilities and services and can gain valuable experience through interactions with decision-makers and researchers at Burroughs Wellcome Company, the Research Triangle Institute, and a wide diversity of private and governmental organizations.

Inquiries and requests for application forms should be directed to the Director of Graduate Studies, School of Pharmacy, The University of North Carolina at Chapel Hill, Beard Hall 200H, Chapel Hill, NC 27514.

## **Graduate Assistants**

A number of graduate assistantships have been established in the School of Pharmacy by the University at Chapel Hill. The stipend for the assistantships is determined annually and covers a nine-month period. Holders of these assistantships are expected to devote from twelve to fifteen hours a week in the supervision of laboratory classes and the checking of reports. This allows assistants to carry approximately two-thirds of the regularly scheduled graduate program each semester.

## **Graduate Scholarships and Fellowships**

**Clinical Drug Research/Drug Development Fellowships:** The School of Pharmacy, in conjunction with Burroughs Wellcome Company and with Glaxo, Inc., conducts two specialized fellowships for the scientifically oriented clinical pharmacist with advanced professional training (e.g., M.S. Pharm., Pharm.D., or Ph.D.). The major purposes of these programs are to provide knowledge and experience in study design and related clinical drug research methodology from both academic and pharmaceutical industry perspectives; to develop expertise in the proper conduct of clinical drug trials; and to provide meaningful exposure to ethical, legal and regulatory issues in research involving investigational and

marketed drugs. The fellowships are two years in length commencing July 1 of each year. Approximately one-half of the fellowship is spent at the School of Pharmacy and one-half at either Glaxo, Inc. or Burroughs Wellcome Company. A stipend of \$15,000 per year is paid with additional allowances for travel. Inquiries should be addressed to: Chairman, Division of Pharmacy Practice; School of Pharmacy, The University of North Carolina at Chapel Hill; Beard Hall 200H; Chapel Hill, NC 27514.

**Teaching Assistantships:** Provide a basic stipend of \$4,800 for nine months service. Recipients of certain appointments may be entitled to pay tuition at a lower rate at the discretion of the Board of Trustees. Total teaching time required is 12 to 15 hours per week. Additional support is available for the summer months (\$1,200). Positions are also available for predoctoral students as research assistants on specific research grants. These furnish up to \$5,200 for the calendar year and possible waiver of out-of-state tuition.

**Postdoctorate Fellowships:** A number of postdoctorate fellowships in Medicinal Chemistry are available for holders of doctoral degrees in medicinal chemistry or in a related field of the pharmaceutical sciences—organic chemistry, biochemistry, etc.—providing the candidate has appropriate minimal academic training and experience to conduct exploratory research on medicinal agents of synthetic or natural origin. Appointments are on a 12-month basis. Similar positions are also available in Pharmaceutics. Stipends vary depending upon experience and are in the range of \$12,000-\$17,000 for twelve months with additional allowances for travel and University fees. Inquiries should be addressed to the School of Pharmacy, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27514.

**Hospital Pharmacy Residency:** Provides a stipend of \$12,000 or \$18,500 for 24 months service and training. Total time required is 15 hours per week during the first two academic semesters and 40 hours per week during other periods.

**The Minority Presence Grant Program for Doctoral Study** provides stipends of up to \$4,000 for the academic year, with an option of \$500 in 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.

## COURSES OF INSTRUCTION

### MEDICINAL CHEMISTRY AND NATURAL PRODUCTS

#### Courses for Undergraduates

**65 Introduction to Medicinal Chemistry 2**

Class: 2 hours. Fall. Maguire, Wyrick.

Prerequisites: Chemistry 61, 62 or equivalents.

Initiates the student into functional group classification schemes of drug molecules and draws correlations between chemical, physical, and pharmacodynamic characteristics of drugs.

**66 Biochemistry 4**

Class: 4 hours. Spring. Piantadosi.

Prerequisites: Chemistry 61, 62; Medicinal Chemistry 65.

An introduction to the principles of biochemistry that gives the students a command of its concepts and language. The course also serves to give the student an appreciation of the biochemistry of the living organism as a basis for understanding drug action.

**68, 69 Medicinal Chemistry 3**

Class: 3 hours. Fall, Spring. Cocolas, Loeffler, Ishaq, Wyrick.

Prerequisites: Chemistry 61, 62; Medicinal Chemistry 65, 66 or equivalents; Physiology 93, Pharmacy 48.

The study of the chemical and physical properties of drugs and their relationship to biological activity.

#### Courses for Graduates and Advanced Undergraduates

**121 Chemistry of Natural Products 3**

Professional Elective. Class: 3 hours. Fall or Spring. Lee, Staff.

Prerequisites: Chemistry 61, 62 or equivalents.

An introduction to the isolation, structure determination, biosynthesis, and synthesis of natural products; emphasis on aspects relating to medicinal chemistry.

**141, 142 Introduction to Research in Medicinal Chemistry 1-3**

Professional Elective. Fall and Spring. Staff.

Prerequisites: Chemistry 61, 62 and permission of instructor.

**151 Biomedical Chemistry 3**

Professional Elective. Class: 3 hours. Fall or Spring. Hall, Staff.

Prerequisites: Medicinal Chemistry 66, 69 or equivalents and permission of instructor.

Principles of genetic regulation and disease which alter drug handling by the body. The effects of drugs on the regulatory mechanisms of cell metabolism, immunodefense, reproduction, and disease states.

**152 Mechanism of Adverse Drug Reactions** 3

Professional Elective. Class: 3 hours. Fall or Spring. Hall, Staff.

Prerequisites: Medicinal Chemistry 68, 69; Pharmacy 54; Pharmacy Practice 77. Introduction to mechanisms of drug interactions using major drug groups as examples with some case histories.

**153 Basic Concepts of Cancer and its Therapy** 3

Professional Elective. Class: 3 hours. Fall or Spring. Hall.

Prerequisites: Medicinal Chemistry 66 or Biochemistry 100; Pharmacology 55, 56; or 216; Pharmacy Practice 76, 77; Physiology 93.

The etiology, pathogenesis, types, metabolic and biochemical differences, detection, prevention, management therapy, adverse effects of cancer therapeutic agents are discussed.

**160 Principles of Quality Control** 4

Professional Elective. Fall. Lee, Maguire, Staff.

Prerequisites: Chemistry 62, Pharmacy 53 or equivalents.

An application of the analytical methods used on raw materials and finished pharmaceutical products with emphasis on good manufacturing practice and USP/NF requirements.

**164 Pharmaceutical Analytical Research Techniques** 2-4

Professional Elective. Spring. Staff.

Introduction to the analytical techniques used in the pharmaceutical sciences.

**168 Medicinal Chemistry** 4

Fall. Loeffler, Ishaq, Wyrick.

Prerequisites: Chemistry 62, Biochemistry 100.

Basic concepts of structure-activity-relationships of chemotherapeutic agents and drugs affecting metabolic disorders. A survey of the important drug classes, discussion of their mechanism of action, and rationale of molecular modification of prototype drugs.

**169 Medicinal Chemistry** 4

Spring. Cocolas, Ishaq, Loeffler.

Prerequisites: Chemistry 62, Physiology 102.

Basic concepts of structure-activity-relationships of pharmacodynamic agents. A study of various classes of drugs acting on the nervous system and cardiovascular system.

**Courses for Graduates**

- 241, 242 Special Problems in Medicinal Chemistry** 1-5  
Fall or Spring. Staff.  
Prerequisites: Chemistry 61, 62 or equivalents. Permission of instructor.  
Feasibility studies in a potential area.
- 243 Selected Topics in Synthetic Organic Medicinal Chemistry** 3  
Fall or Spring. Staff.  
Prerequisites: Chemistry 166 or equivalent.  
Discussions from current literature on the theory and techniques involved in the synthesis of biologically active compounds.
- 244 Selected Topics in Natural Products Chemistry** 2  
Fall or Spring. Lee, Staff.  
Prerequisites: Chemistry 166, 168.  
Discussions of important recent development in the chemistry of natural products of biomedical significance.
- 270 Advanced Medicinal Chemistry** 3  
Fall. Staff.  
Prerequisites: Medicinal Chemistry 168, 169 or equivalents.  
Special topics in Medicinal Chemistry stressing physicochemical and biological principles of drug action, drug design, and drug receptor interactions.
- 271 Advanced Medicinal Chemistry** 3  
Spring. Staff.  
Prerequisite: Medicinal Chemistry 270.  
Current special topics in Medicinal Chemistry.
- 361, 362 Seminar** 1  
Fall and Spring. Staff.
- 391, 392 Research in Medicinal Chemistry** 1-5  
Fall and Spring. Staff.  
Consists of laboratory work, conferences with the major professor, and library investigations relating to research. The professor in charge is responsible for the assignments and approval of the subject and character of the thesis.
- 393 Master's Thesis** 3 or more  
Fall or Spring. Staff.
- 394 Doctoral Dissertation** 3-5  
Fall or Spring. Staff.

## PHARMACY PRACTICE

### Courses for Undergraduates

#### **21 Drugs, the Pharmacist, and the Health Care System** 1

Class: 1 hour lecture, 1 hour recitation. Fall. Eckel, Staff.

This course provides an introduction to the pharmacist's role in the health care system and initiates the student's professionalization process. Major issues in health care and drug use control are discussed. Pharmacist's responsibilities in various environments are explored.

#### **75 Introduction to Clinical Pharmacy Practice** 4

Class: 4 hours. Spring. Pittman, Staff.

Prerequisites: Pharmacy 51; Pharmacy 48 corequisite.

The student is expected to accomplish a number of objectives that will contribute to his professional expertise. The student will: 1) be able to administer a number of pharmaceutical dosage forms (injections, tablets and capsules, nasal and otic preparations, eye solutions and drops, etc.), 2) demonstrate that he or she can properly educate patients in drug use, 3) monitor the effect of specific drug therapies and distinguish these from disease progression (monitor vital signs), 4) be able to use the health team language in his or her professional work and 5) integrate drug therapy and disease through the case study method.

#### **76, 77 Pathophysiology and Therapeutics** 4

Class: 4 hours. Fall, Spring. Dennis, Pulliam, Staff.

Prerequisites: Pharmacy Practice 75, Pharmacy 48.

Didactic courses in clinical pharmacy which emphasize the pathophysiology and treatment of those disease states most frequently encountered in pharmacy practice. Selection and dosing of drugs most frequently used in these disease states and the recognition of significant therapeutic and adverse drug effects are considered.

#### **78 Drug Information Practice** 2

Professional Elective. Fall, Spring. Kessler, Rosman.

Prerequisites: Pharmacy Practice 76, 77 and permission of instructor.

Concepts in drug information practice will be presented including types of drug information requests, sources of drug information and establishing drug information services in a variety of practice settings. Practical experience will be gained in a drug information center.

#### **88 Prescription Specialties** 3

Professional Elective. Fall and Spring. Staff.

Distinctive classes of pharmaceutical forms, important pharmacotherapeutic groups, and individual drugs in relation to current professional practice.

**92L Academic Externship Program** **12**

Fall and Spring. Paoloni, Staff.

Prerequisites: All preceding coursework through the fifth year.

A course designed to complete the senior pharmacy students' undergraduate education by means of a structured, supervised program of participation in pharmacy practice. Students will gain experience in the application of basic and pharmaceutical sciences to direct patient care and to the solution of professional problems. This course is a full-semester, 15-week rotation away from the University campus and is approved for externship experience credit with the North Carolina Board of Pharmacy.

**94 Institutional Pharmacy Practice** **3**

Professional Elective. Class: 3 hours. Fall, Spring. Eckel, Hughes, Staff.

Through seminars, lectures, case studies, and discussion, the student will gain an understanding of institutional pharmacy practice.

**Courses for Graduates and Advanced Undergraduates****108 Clinical Pharmacy Clerkship** **3-6**

Professional Elective. Fall and Spring. Staff.

Prerequisites: Permission of instructor.

Through assigned responsibility in Clinical Pharmacy Services students are exposed to and learn how to solve drug therapy problems.

**109 Topics in Acute Care Pharmacy Practice** **2**

Professional Elective. Fall and Spring. Dennis, Patterson, Staff.

Prerequisites: Pharmacy Practice 76, 77 and permission of instructor.

Limited enrollment.

Focus is made upon choice and rationale for drug therapy, dosing guidelines, and monitoring parameters for assessment of drug efficacy and toxicity. Lectures and seminars concentrate on pathophysiology and drug management or problems commonly seen in acute care pharmacy practice settings.

**110 Ambulatory Care Pharmacy** **3**

Professional Elective. Fall and Spring. Caiola, Staff.

Prerequisites: Pharmacy Practice 76, 77 and permission of instructor.

Didactic instruction is provided on selected subjects in therapeutics relevant in ambulatory patient care. Proficiency in ambulatory clinical pharmacy practice is gained through discussion sessions and laboratory experiences in specific ambulatory care environments.

**132, 133 Topics in Hospital Pharmacy** **1-3**

Fall, Spring. Pittman, Staff.

Prerequisites: Pharm.D., Graduate standing, or permission of instructor. Various topics of interest to the students and faculty are presented in seminar format. Topics presented are related to pharmacy management and/or clinical practice.

**134 Clinical Therapeutics Conference 3**

Professional Elective. Fall, Spring. Staff.

Prerequisites: Pharmacy Practice 76, 77.

Course utilizes lectures, seminars, and case presentations to introduce the student to the knowledge system of clinical pharmacy. Didactic skills in laboratory methods, physical assessment, medical terminology, and utilization of the medical record are taught. Individual case presentations are utilized to emphasize oral and written communication skills.

**135, 136 Introduction to Research in Pharmacy Practice 1-3**

Professional Elective. Fall, Spring. Eckel, Staff.

Prerequisites: Permission of instructor.

Students participate in ongoing faculty projects. Involvement varies from laboratory work, literature searches, to patient studies.

**156 Clinical and Analytical Principles of Toxicology 3**

Class: 3 hours. Spring. Miya, Staff.

Prerequisites: Chemistry 41, 42; Pharmacology 55, 56; Pharmacy Practice 76, 77.

Graduate standing, Pharm.D., or permission of instructor.

General concepts of drug toxicity including routes of exposure, safety and efficacy evaluation, antidotal treatment, common poisons, pesticides, vitamins, metal, etc. and analytical methods for measuring these agents in biological fluids.

**175 Iatrogenic Diseases 3**

Professional Elective. Class: 3 hours. Spring. Patterson, Raasch, Staff.

Prerequisites: Pharmacy Practice 76, 77; Pharm.D. or permission of instructor.

This course presents the toxic effects of drugs upon various organ systems, and provides the student with a practical, working knowledge of adverse drug effects. Methods to avoid, delay, modify, and treat these side effects are also discussed.

**176, 177 Advanced Clinical Pharmacy 6**

Fall, Spring. Hak, Staff.

Prerequisites: Pharmacy Practice 76, 77.

The course is designed to prepare the student to actively participate in the care of patients through interactions with patients, physicians, nurses, and other health care professionals. This will be accomplished through integra-

tion of the basic concepts of anatomy, biochemistry, physiology, pharmacy, pharmacology, toxicology, and the drug treatment of disease. The student will learn the mechanisms causing certain disease processes, the symptomatology of the disease, laboratory alterations due to the disease, and the drug therapy for the disease. Emphasis will be given to therapeutic objectives, alternatives, and end-points pertinent to rational drug therapy.

### **178 Drug Information Retrieval and Analysis** **2**

Fall. Rosman, Kessler, Staff.

Prerequisites: Pharmacy Practice 176, 177; Pharm.D. student.

Concepts of drug information practice will be presented including types of drug information requests, drug information sources, and drug literature evaluation. Drug utilization review, adverse drug reaction surveillance, and the impact of the medical literature on rational therapeutics and prescribing will also be examined.

### **179 Monitoring Drug Therapy** **3**

Summer. Staff.

Prerequisites: Pharmacy Practice 75, 76, 77; Pharm.D. student or permission of the instructor.

Skills in assessment of a patient's physical findings assist the pharmacist in drug therapy evaluation and monitoring. The student will be able to interview a patient to gain an accurate medication history, record findings in a medical record, and determine improvement or ill effect in a patient due to drug therapy. The role of the pharmacist in a triage role can be greatly enhanced by skill in physical assessment. Such skills can augment the ability to judge success and failure to drug therapy and provide the ability to evaluate complications of drug therapy. Moreover, it facilitates pharmacist interaction with physicians on the health care team, provides essential research skills, and improves his ability to act as a paramedical health provider.

### **194, 195, 196 Clinical Pharmacy Clerkship for Pharm.D. Students**

**9 Summer**  
**12 Fall, Spring**

Summer, Fall, Spring. Raasch, Staff.

Prerequisites: All required Pharm.D. courses prior to second summer session.

In order to improve the student's ability to deliver pharmaceutical health care services, the clinical rotations course is developed to provide the necessary basic training. The course will give the student a patient-oriented drug therapy experience, and emphasize patient responsibility and effective communication with the other members of the health care team. The clinical rotations course will allow the student to apply his previous academic and didactic clinical coursework in actual patient care situations. As the student's ability develops throughout the course, it would be expected

that he would assume an increasing role in patient monitoring and in developing rational drug therapy. Clinical rotations may include but are not limited to: Hypertension, Drug Information Center, Clinical Pharmacology, Pediatrics, Adult Medicine, AHEC, Ambulatory Care, Radiopharmacy.

## Courses for Graduates

- 193 Research Methods in Pharmacy Practice** 3  
Spring. Pulliam.  
Prerequisites: Graduate standing.  
An introductory course on research methods focusing on the components of research in health service, epidemiologic and clinical aspects of pharmacy practice.
- 201, 202 Advanced Clinical Pharmacy** 3  
Fall and Spring. Staff.  
Prerequisites: Graduate standing.  
Discussions, workshops, and lectures to develop the student's skills and abilities to make therapeutic recommendations, utilize the drug literature, educate patients and health professionals, and record observations, plans, and actions in a problem-oriented record.
- 203 Metabolic Management of the Hospitalized Patient** 2  
Spring. Hak.  
Prerequisites: Pharm.D. or Graduate standing.  
Presents a comprehensive discussion of the fluid, electrolyte, acid-base, and nutritional management of the hospitalized patient.
- 210 The Development and Clinical Investigations of Drugs** 2  
Fall. Cato.  
Prerequisites: Pharm.D. or Graduate standing.  
Includes preclinical drug safety evaluation, preclinical pharmacology, design of protocols for Phases I-IV, FDA guidelines for clinical study, preparation of study plan, statistics in clinical trials, data analyzing, and FDA interactions with industry.
- 249 Hospital Pharmacy and the Hospital Organization** 3  
Fall. Eckel.  
This course discusses the principles of health care delivery and their impact on the role of the hospital. The hospital as an organized unit for the delivery of health care is discussed. How the pharmacist might contribute to the hospital's role is reviewed.

- 250 Principles of Pharmacy Practice** 3  
Spring. Eckel.  
Prerequisites: Pharmacy Practice 249.  
The modern roles of the pharmacist in the organized health care setting are explored. Progressive management techniques to support innovative services are discussed. The problems with implementing these programs are reviewed.
- 361, 362 Seminar** 1  
Fall, Spring. Pittman.
- 391, 392 Research in Pharmacy Practice** 1-5  
Fall, Spring. Staff.  
Graduate course consisting of laboratory work, conferences with the major professor, and library investigations, relating to research.
- 393 Master's Thesis** 3 or more  
Fall, Spring. Staff.

## PHARMACEUTICS

### Courses for Undergraduates

- 48 Disease States of Humans** 4  
Class: 3 hours lecture, 2 hours recitation. Spring. Hall, Miya, Raasch.  
Prerequisites: Zoology 11 and 45.  
Basic pathological disease states as they relate to drug therapy, environmental toxicology, chemically induced diseases, teratogenic and carcinogenic agents.
- 51 Pharmaceutical Calculations** 1  
Class: 1 hour. Fall. Staff.  
Introduction to the types of calculations necessary in the modern practice of pharmacy.
- 52 Basic Pharmaceutics I** 3  
Class: 3 hours. Fall. Staff.  
Corequisite: Pharmaceutics 51.  
Theory and practice of physical-chemical principles as applied to pharmacy.
- 52L Basic Pharmaceutics I Laboratory** 1  
Laboratory: 3 hours. Fall. Staff.

- 53 Basic Pharmaceutics II** 3  
Class: 3 hours. Spring. Staff.  
Prerequisite: Pharmaceutics 52.  
Introduction to pharmaceutical dosage forms — their production, evaluation, and quality assurance, including radiopharmaceuticals.
- 53L Basic Pharmaceutics II Lab** 1  
Laboratory: 3 hours. Spring. Staff.
- 54 Pharmacokinetics and Biopharmaceutics** 2  
Class: 3 hours. Fall. Staff.  
Prerequisites: Physiology 93 and Pharmaceutics 53.  
A basic study of the concentration-time course of drugs and their metabolites, methods of pharmacokinetic analysis, bioavailability, design of dosage regimens, influence of disease states on drug kinetics, and pharmacokinetic drug interactions.
- 55 Drugs and Health** 3  
Class: 3 hours, Fall and Spring. Wier, Staff.  
Course limited to nonmajors in pharmacy.  
An introduction to the commonly used drugs in health care and the health care system.
- 72L Dispensing Laboratory** 1  
Laboratory: 3 hours. Fall and Spring. Paoloni, Smith, Claytor.

## **Courses for Graduates and Advanced Undergraduates**

- 103 Sterile Pharmaceutical Products** 3  
Professional Elective. Spring. Kowalsky, Olsen, Sadek.  
Prerequisites: Pharmaceutics 53; permission of instructor.  
A study of the preparation and properties of parenteral drug forms along with required control procedures.
- 104 Toxicology and Drug Abuse** 3  
Professional Elective. Fall. McBay.  
Prerequisites: Medicinal Chemistry 66 and 69.  
Introduction to drug and chemical adverse reactions including important aspects of toxicology and industrial hygiene.
- 105 Analytical Toxicology** 1  
Spring. McBay.  
Permission of instructor required.

- 106 Radiopharmaceuticals** **3**  
Professional Elective. Fall or Spring. Kowalsky.  
Prerequisites: Pharmaceutics 53; permission of instructor.  
Principles and techniques of radioisotopes, the dispensing and control of radiopharmaceuticals.
- 106L Radiopharmaceuticals Laboratory** **2**  
Fall or Spring. Kowalsky.  
Corequisite: Pharmaceutics 106.
- 162 Pharmaceutical Technology I** **3**  
Professional Elective. Fall. Olsen, Sadek, Staff.  
Permission of instructor required.  
Study and manufacture of pharmaceuticals on a large and semicommercial scale.
- 163 Pharmaceutical Technology II** **3**  
Professional Elective. Spring. Olsen, Sadek, Staff.  
Permission of instructor required.  
Continuation study of pharmaceutical manufacturing and the development of new products.
- 171, 172 Introduction to Research in Pharmaceutics** **1-3**  
Professional Elective. Fall, Spring, Summer. Staff.  
Permission of instructor required.  
Students participate in special research projects designed to introduce them to research opportunities in pharmaceutics.
- 182 Clinical Pharmacokinetics** **4**  
Professional Elective. Spring. Wargin, Powell, Shrewsbury.  
Prerequisites: Pharmaceutics 54 or equivalent. Permission of instructor required for undergraduate students.  
Considerations on classical pharmacokinetic models as applied to the use of drugs in the clinical setting. Pharmacokinetic profiles of specific therapeutic agents are presented.
- 191, 192 Product Formulation** **5**  
Fall and Spring — alternate years. Olsen, Sadek.  
Permission of instructor required.  
Development and evaluation of pharmaceutical and cosmetic products including quality control.

## Courses for Graduates

- 251 Advanced Pharmaceutical Technology I** **3**  
Fall — alternate years. Olsen, Sadek.  
Prerequisites: Pharmaceutics 53 and permission of instructor.  
Principles of unit operations, including heat transfer, filtration, fluid mechanics, comminution, blending, and compression.
- 252 Advanced Pharmaceutical Technology II** **3**  
Fall — alternate years. Olsen, Sadek.  
Prerequisites: Pharmaceutics 53 and permission of instructor.  
Principles of pharmaceutical manufacture, including liquid, solid and semi-solid dosage forms, sterile products, scale up operations, and evaluation.
- 253, 254 Special Topics in Advanced Pharmaceutics** **0-4**  
Fall and Spring. Staff.  
Permission of instructor required.  
A lecture and/or laboratory course designed to present new concepts and innovations in the area of pharmaceutics.
- 255 Advanced Biopharmaceutics** **3**  
Spring — alternate years. Shrewsbury, Wargin.  
Prerequisites: Pharmaceutics 54 and permission of instructor.  
Study of drug absorption mechanisms; influence of route of absorption on drug disposition; design and evaluation of bioavailability studies.
- 256 Advanced Pharmacokinetics** **3**  
Fall — alternate years. Shrewsbury, Wargin.  
Prerequisites: Pharmaceutics 54 and permission of instructor.  
Classical linear modeling; physiological modeling; kinetics of pharmacologic effect; computer analysis of pharmacokinetic data; nonlinear and metabolite kinetics.
- 291 Advanced Physical Pharmacy I** **3**  
Spring — alternate years. Hadzija, Swarbrick.  
Prerequisites: Pharmaceutics 53 and permission of instructor.  
Application of physicochemical principles to pharmaceutical systems with emphasis on solutions. Topics include kinetics, stability, dissolution, diffusion, colligative properties, surface chemistry, and ionic equilibria.
- 292 Advanced Physical Pharmacy II** **3**  
Spring — alternate years. Hadzija, Swarbrick.  
Prerequisites: Pharmaceutics 53 and permission of instructor.  
Application of physicochemical principles to pharmaceutical systems, with emphasis on heterogeneous systems. Topics include colloids, sur-

face active agents, phase rule, complexation, rheology, and preformulation.

**361, 362 Seminar** **1**  
Fall and Spring. Staff.

**391, 392 Research in Pharmaceutics** **1-5**  
Fall or Spring. Staff.  
Graduate course consisting of laboratory work, conferences with the major professor, and library investigations relating to research.

**393 Master's Thesis** **3 or more**  
Fall or Spring. Staff.

**394 Doctoral Dissertation** **3-5**  
Fall or Spring. Staff.

## PHARMACY ADMINISTRATION

### Courses for Undergraduates

**90 Financial and Personnel Management** **3**  
Class: 3 hours. Fall. Gagnon.

Course acquaints students with the managerial principles of personnel and organizational management. In addition, it presents the basic principles and techniques of financial management. Analytical decision making skills in finance and personnel management are developed through case analyses.

**93 Pharmacy Public Relations** **2**  
Professional Elective. Class: 2 hours. Fall, Spring. Capowski.

Involves the application of communication and public relations skills to many aspects of pharmacy practice. Includes open discussions on such topics as current issues facing the profession, empathy, ethics, and advertising. Small group dynamic methods are used in developing a planned public relations program on a health related topic. Active student participation is expected and an integral part of the course.

**96 Patient Counseling and Socioeconomics of Health Care Systems** **3**  
Class: 3 hours. Spring. Mackowiak, Staff.

Develops knowledge of commonly employed communication skills and the factors which affect communication. Applies these skills to patient, professional, and other interactions through role playing. Examines the structure of the health care system and its economic and health outcome implica-

tions. Discusses behavioral aspects of medical care such as illness behavior, prescribing influences, compliances, health belief model, self care, and symptom awareness.

**97 Computer Use in Pharmacy** **2**

Professional Elective. Class: 2 hours with laboratory sessions to be assigned. Fall, Spring. Hartzema.

Permission of instructor required.

Major trends in computer-based information handling and the pharmacist's relationships and responsibilities. Orientation will be provided in systems designed to handle dispensing operations, patient medication records, drug interactions, drug research and manufacture, and business applications in retail and wholesale pharmacy. Laboratory sessions provide on-site visits and lectures by users of such systems.

**98 Pharmacy Management** **3**

Professional Elective. Class: 3 hours. Fall, Spring. Chambers.

Prerequisite: Pharmacy Administration 90.

Community pharmacy in the distribution of pharmaceutical products through study of personnel policies and training; store layout, design, location and organization; merchandise operations and control; and expense control and analyses. Case problems are discussed and each student manages a community pharmacy through a computer simulation.

**99 Pharmaceutical Law** **2**

Class: 2 hours. Spring. Gagnon.

Describes pharmacy professional practice, controlled substances, and food and drug laws in depth. Gives introduction to business law, e.g., anti-trust, contracts, and liability, and other laws affecting contemporary practice.

## **Courses for Graduates and Advanced Undergraduates**

**179 Behavioral Foundation of Clinical Practice** **3**

Class: 3 hours. Fall. Hartzema.

Prerequisites: Pharmacy Administration 96 or permission of the instructor.

Provides the student with a broad understanding of issues facing the clinical practitioner. The influence of the demands of the bureaucratic practice setting, as well as patient demands made on practice, will be discussed. Major sociological, psychological, and behavioral theories and their application in the patient care will be covered. The course will be based upon reading, discussion, and critiques of articles reflecting important, possibly divergent, points of view emerging or currently significant in clinical practice.

**180 Pharmaceutical Marketing and Economics 3**

Class: 3 hours. Fall or Spring. Gagnon.

Prerequisite: Graduate standing.

A survey of the U.S. drug distribution system from pharmaceutical manufacturer to community pharmacy operation. Marketing strategies, management practices, pricing, research and development, promotion and advertising, and the structure of the drug industry are analyzed.

**190 Selected Topics in Pharmacy Administration 3**

Professional Elective. Fall, Spring. Staff.

Prerequisites: Pharmacy Administration 90 and 96, permission of instructor.

A reading and/or special projects course for both undergraduates and graduate students interested in pursuing additional work in the administrative and social sciences as they pertain to pharmacy practice.

**Courses for Graduates****201 Pharmaceutical Services and Health Care Systems 3**

Class: 3 hours. Fall or Spring. Hartzema.

Prerequisite: Graduate standing.

Pharmacy's current and future position in America's health care system is the underlying topic of this course. Special emphasis is placed on evaluative studies and pharmacy's role in third-party prescription plans, drug utilization review, governmental programs, and other health organizations.

**202 Pharmacy Management 3**

Fall or Spring. Gagnon.

Prerequisite: Graduate standing.

Assigned readings in financial and personnel management followed by discussion, lectures, oral and written reports, a research project, case studies, and visitations to drug companies and chain store organizations will form an important part of this course. Topics to be covered include pharmacy buying, merchandising, pricing, and others.

**203 Research Methods 3**

Fall or Spring. Gagnon, Hartzema.

Prerequisite: Graduate standing.

The principles and theories of research in the evaluation of services delivered in pharmacy practices are presented. Included in this course are lectures on survey and questionnaire development and use of various attitudinal measurement devices, e.g., semantic differential, Likert scale, etc.

The University of North Carolina at Chapel Hill 69  
School of Pharmacy

**361, 362 Seminar** 1

Fall, Spring. Staff.

Prerequisite: Graduate standing.

**391, 392 Research in Pharmacy Administration** 1-5

Fall, Spring, Staff.

Prerequisite: Graduate standing.

**393 Master's Thesis** 3 or more

Fall, Spring. Staff.

Prerequisite: Graduate standing.

## THE BASIC SCIENCES

**51 Bacteriology** 4

Class: 3 hours, Laboratory: 2 hours. Fall. Twarog.

Prerequisites: Chemistry 11, 21.

The general principles and techniques of bacteriology and the relations of microorganisms to sanitation, agriculture, medicine, and industry.

**93 Physiology** 4

Class: 3 hours, Recitation: 2 hours. Fall. Staff.

Prerequisites: Chemistry 11, 21; Zoology 45.

A general course in mammalian physiology with emphasis on the various organ systems and their interrelationships.

**55, 56 Pharmacology** 3

Class: 3 hours. Fall and Spring. Staff.

Prerequisites: All preceding courses in Chemistry, Zoology, Bacteriology, and Physiology.

General principles as they apply to the major drug classes will be stressed.

## COURSES IN ACADEMIC DEPARTMENTS

### Chemistry

**11 General Descriptive Chemistry** 3

Class: 3 hours. Fall and Spring. Staff.

Corequisite: Chemistry 11L.

**11L Quantitative Chemistry Laboratory** 1

Laboratory: 3 hours. Fall and Spring. Staff.

**21 General Descriptive Chemistry 3**

Class: 3 hours. Fall and Spring. Staff.

Corequisite: Chemistry 21L.

**21L Quantitative Chemistry Laboratory 1**

Laboratory: 3 hours. Fall and Spring. Staff.

Techniques for quantitative acid-base redox, and complexometric titrimetry. Gravimetric analysis. Total salt ion exchange analysis. (Transfer students who have not had quantitative analysis in their previous courses will take this laboratory.)

**41 Modern Analytical Methods for Separation and Characterization 2**

Fall and Spring. Buck, Burse, Knight, Murray, Isenhour.

Prerequisite: Chemistry 21; Corequisite: Chemistry 41L.

The basic prerequisite or corequisite, Chemistry 61 (2-hour course). The basic principles of chemical separations, including chromatography and electrophoresis, and an introduction to analytical spectroscopy (visible, ultraviolet, and infrared) from a quantitative and structural viewpoint.

**41L Laboratory in Separations and Analytical Characterization of Organic and Biological Compounds 2**

Laboratory: 4 hours. Fall and Spring. Analytical and organic staff.

Prerequisite or corequisite: Chemistry 61; Corequisite: Chemistry 41.

Applications of separation and spectroscopic techniques to organic compounds, including some of biological interest. Principles of chromatography and absorption, spectroscopy, correlation of spectra with structure. (This laboratory serves as an organic chemistry laboratory for premedical and pre-dental students.)

**42 Modern Analytical Methods for Separation and Characterization 2**

Fall and Spring. Buck, Burse, Knight, Murray, Isenhour.

Prerequisite or corequisite: Chemistry 62; Corequisite: Chemistry 42.

Applications and illustrations of modern analytical spectroscopic techniques; quantitative investigation of chemical properties through electrochemical, radio-chemical, and new titrimetric techniques (some preparative experience is included with these students). (This course serves as an organic chemistry laboratory for premedical and pre-dental students.)

**61 Introduction to Organic Chemistry 2**

Fall and Spring. Hiskey, Little, McKee, Coke, Whitten, Rieke, Harrison, Kropp, Brookhart, Eliel, Evans.

Prerequisite: Chemistry 21.

Molecular structure and its determination by modern physical methods, correlation between structure and reactivity and the theoretical basis for these relationships; classification of "reactive types" exhibited by organic molecules using as examples molecules of biological importance.

**62 Introduction to Organic Chemistry 2**

Fall and Spring. Hiskey, Little, McKee, Coke, Whitten, Rieke, Harrison, Kropp, Brookhart, Eliel, Evans.

Prerequisite: Chemistry 21.

Molecular structure and its determination by modern physical methods, correlation between structure and reactivity and the theoretical basis for these relationships; classification of "reaction types" exhibited by organic molecules using as examples molecules of biological importance.

## **ECONOMICS**

**10 General Economics 3**

Class: 3 hours. Fall and Spring. Staff.

The organization and underlying principles of modern economic life. The production, exchange, distribution, and consumption of wealth and auxiliary economic problems.

## **ENGLISH**

**1 English Composition and Rhetoric 3**

Class: 3 hours. Fall and Spring. Staff.

Required of all students except those qualifying by placement test for English 2.

**2 English Composition and Rhetoric 3**

Class: 3 hours. Fall and Spring. Staff.

Required of all students except those qualifying by placement test for English 21.

## **MATHEMATICS**

**31 Calculus with Analytic Geometry 3**

Class: 3 hours. Fall and Spring. Staff.

An integrated treatment of analytic geometry and the differential and integral calculus of functions of one variable.

## **PHYSICAL EDUCATION**

Fall and Spring. Staff. 4 hours per week.

Required of freshman men and women. Two semesters.

## ZOOLOGY

### **11, 11L Principles of Zoology** **4**

Class: 3 hours; Laboratory: 3 hours. Fall and Spring. Staff.

Prerequisite to all other courses in Zoology. Principles, problems, and experimental methods of animal biology; basic similarities of all living organisms; organ systems and their physiology; embryology, genetics, organic evolution, ecology; survey of the major animal phyla.

### **45 Fundamentals of Human Anatomy and Physiology** **3**

Class: 3 hours. Fall and Spring. Staff.

Prerequisites: Zoology 11, 11L; Corequisite, Zoology 63L.

Basic structure and function in the human body and their explanation by principles of embryology, histology, heredity, and evolution.

### **63L Vertebrate Structure and Evolution Laboratory** **1**

Laboratory: 3 hours. Fall and Spring. Feduccia.

Prerequisite or corequisite, Zoology 103 or 45.

Vertebrate comparative anatomy of organ systems and their evolution with emphasis on human anatomy.

## SPECIAL SCHOOL OF PHARMACY PROGRAMS

### **Area Health Education Centers (AHEC) Education and Training**

The North Carolina Area Health Education Centers (AHEC) Program exists as a partnership between four university health science centers and nine regional education and training centers. The School of Pharmacy recognizes this partnership in education and training. The curriculum contains practical experience coursework which places the student in the community or hospital pharmacy and/or in institutional patient care units in which students learn to apply knowledge of drugs in a safe and effective manner. In these settings, students have an opportunity to participate in and observe the expanding role of the pharmacist as an integral part of the health delivery team. The student contributes to the pharmacist's role by bringing his/her extensive knowledge of drugs to bear on clinical problems in a systematic and coordinated way. The AHEC Program offers an ideal arena for the educational advancement of all health science students in an inter- and intra-professional environment.

## Pharmacy Foundation of North Carolina, Inc.

In December, 1946, the North Carolina Pharmaceutical Research Foundation was established by the pharmacists of North Carolina through their state association. In September, 1982, the Board of Directors approved a name change to the Pharmacy Foundation of North Carolina, Inc. Under the terms of its charter the "Foundation is a nonprofit, charitable corporation carrying no capital stock and will have the full power to receive donations and bequests; can purchase, lease, and otherwise acquire property; and can pay in full or supplement salaries of persons engaged in pharmaceutical research and education. It can also donate equipment, materials, or other facilities for the development, expansion, and extension of educational, research, and service projects thereby promoting the pharmaceutical service of the State and the South through the University at Chapel Hill." The general purposes of the Foundation are to foster and promote the growth, progress, and general welfare of pharmaceutical education and research at the School of Pharmacy and throughout the State.

### AWARDS

**Distinguished Service Award.**—(Established in 1961.) An engraved mortar and pestle is presented to an individual other than a student or member of the Pharmacy Faculty who has made outstanding contributions to the instruction, research, and/or service function of the School of Pharmacy.

**Syntex Practitioner-Instructor of the Year Award.**—Made annually to a Practitioner-Instructor for outstanding contribution to the Pharmacy Externship Program. Nominations are made by Pharmacy Externs, and the recipient is selected by a special committee composed of students and faculty members. Sponsor: Syntex Laboratories.

**The Pharmacy Faculty Award.**—(Established in 1958.) An engraved bronze mortar and pestle is given annually by the faculty of the School of Pharmacy and awarded to the student in the graduating class making the highest average during the three years of study.

**The Buxton Williams Hunter Award.**—(Established in 1937.) Offered annually in memory of the late Mr. Buxton Williams Hunter, of New Bern, to that graduating student who excels in campus citizenship and scholarship. The recipient is determined by the faculty.

**The Lilly Achievement Award.**—(Established in 1966.) This gold medal is given by Eli Lilly and Company of Indianapolis and awarded to a graduating student for superior scholastic and professional achievement. The recipient is determined by the faculty.

**Upjohn Achievement Award.**—Awarded to a graduating student for performance of outstanding services to the School of Pharmacy. This award is sponsored by the Upjohn Company. The recipient is determined by the faculty.

**Bristol Award.**—(Established in 1951.) An award consisting of a plaque and a useful reference work is given annually by Bristol Laboratories, Inc. to a graduating student for noteworthy achievement in pharmacy. The recipient is determined by the faculty.

**Merck Awards.**—(Established in 1941.) Two to three awards, each consisting of two reference works, are given annually by Merck & Co., Inc. to graduating students for noteworthy achievement in pharmacy. The recipients are determined by the faculty.

**The Lemmon Company Student Award.**—(Established in 1980.) Awarded annually to the graduate who has earned the highest grade average during the three-year professional program. The award consists of a certificate and a monetary award. Sponsor: Lemmon Company.

**The M. L. Jacobs Memorial Award.**—(Established in 1957.) In honor of the memory of Dr. M.L. Jacobs, Dean of the School of Pharmacy from 1946 to 1950, the Xi Chapter of Rho Chi annually awards a prize to that student demonstrating the greatest excellence in medicinal chemistry.

**Division of Pharmaceutics Achievement Award.**—(Established in 1983.) An award to the fourth year student whose overall performance in the pharmaceutics course sequence is judged to be superior.

**McNeil Award.**—Awarded annually to a fourth-year student for outstanding performance in Pharmacy Administration studies. The winner of this award is eligible to compete for a \$1500 prize in a Scholarship Essay Contest prior to the senior year. Sponsor: McNeil Consumer Products Company.

**The Ralph P. Rogers, Sr., Pharmacy Administration Award.** In honor of Ralph P. Rogers, Sr. A monetary award presented annually to recognize exceptional meritorious performance by a fourth-year pharmacy student who has completed one or more Pharmacy

Administration courses and is thinking of pursuing a career in the management area. Candidates for the award submit a 1,000 word essay on a pharmacy administration related topic and are interviewed by the Pharmacy Administration Division faculty. The award is sponsored by the Rogers family.

**Division of Pharmacy Practice Achievement Award.**—An award to a graduate who has demonstrated a high degree of professional motivation and concern about the role of the pharmacist in the delivery of health care.

**Smith Kline & French Award.**—An award for academic excellence with demonstrated ability to apply this expertise to clinical practice. Sponsor: Smith Kline & French Laboratories.

**Rho Chi First Year Award.**—(Established in 1933.) The Xi Chapter of Rho Chi annually awards a prize in the form of a suitable reference work to that student who shows the highest scholarship in the first year of the pharmacy curriculum.

**Fraternity Scholastic Award.**—(Established in 1964.) A permanent plaque is engraved each year with the name of the pharmacy fraternity whose members attain the highest scholastic average in the preceding two semesters. The three professional fraternities, Kappa Epsilon, Kappa Psi, and Phi Delta Chi, who participate in the competition, sponsor the award to stimulate academic achievement.

**The School of Pharmacy Student Body Award.**—(Established in 1948.) A mortar and pestle is given annually by the student body of the School of Pharmacy to the member of the graduating class who has demonstrated the highest qualities of character, deportment, scholarship, participation in extracurricular activities, and promise of future distinction in the profession. The winner of the trophy is determined by a special committee composed of representatives from each recognized student organization in the School of Pharmacy.

**Kappa Epsilon Award.**—(Established in 1947.) The Lambda Chapter of Kappa Epsilon awards annually a prize to a fourth- or fifth-year woman student in the School of Pharmacy who has demonstrated highest qualities of leadership, character, service, and scholarship. The recipient is selected by a special committee of students and faculty members from a slate of nominees determined by Lambda Chapter of Kappa Epsilon.

**Best Instructor Award.**—Awarded to that member of the School of Pharmacy Faculty selected by the Senior Class as representing the highest qualities of instructional ability. This award is sponsored by the Pharmacy Senate.

**McKesson & Robbins Award.**—Presented on behalf of McKesson & Robbins, Inc., to the President of the Student Chapter, American Pharmaceutical Association.

**APhA Certificate.**—Presented to a graduating student on behalf of the American Pharmaceutical Association for outstanding services to the Student Chapter at The University of North Carolina at Chapel Hill.

**The Fannie Jackson Andrews Award.**—Funds have been made available through the North Carolina Pharmaceutical Research Foundation to establish monetary awards each year for one or more students who have made outstanding positive contributions to the profession of pharmacy. The selection of recipients of the awards is made by a special committee which includes representatives of the faculty and the student body of the School of Pharmacy and the North Carolina Pharmaceutical Research Foundation. The awards are announced late in the Spring Semester; the monetary awards are presented at the beginning of the ensuing Fall Semester. If, in the opinion of the selection committee, there is no student deserving of the award in a given year, no award will be made.

**Student Body President Award.**—Awarded annually to the President of the Student Body. Sponsor: The Student Body of the School of Pharmacy.

## STUDENT ORGANIZATIONS

**The Xi Chapter of Rho Chi.**—(Established in 1929.) Charters for chapters of this national pharmaceutical society are granted only to groups in colleges that are members in good standing of the American Association of Colleges of Pharmacy. Eligibility for membership in the society is based on high attainment in scholarship, character, personality, and leadership. All candidates selected for membership must have completed 105 semester hours, or the equivalent, of college work, and they must be approved by the Dean of the School of Pharmacy.

**The University of North Carolina Students' Branch of the North Carolina Pharmaceutical Association.**—(Established in 1936.) The aim of the organization is to unite students of pharmacy for mutual assistance, encouragement, and improvement, and to advance the science and art of pharmacy.

**The University of North Carolina School of Pharmacy Students' Chapter of The American Pharmaceutical Association.**—(Established in 1952.) It is the purpose of this organization to increase interest in pharmaceutical problems and progress at the national level. The group holds joint meetings with the Students' Branch of the North Carolina Pharmaceutical Association.

Other recognized student organizations are: Student National Pharmaceutical Association, Student Body of the School of Pharmacy, Pharmacy Senate, Phi Lambda Sigma, Carolina Industrial Pharmacy Society, Kappa Epsilon Pharmaceutical Fraternity, Kappa Psi Pharmaceutical Fraternity, Phi Delta Chi Pharmaceutical Fraternity, Student American Pharmaceutical Association.

Eligibility to stand for election and to hold office in student organizations of the School of Pharmacy is restricted to full-time students (12 credit hours minimum each semester) who are in good academic standing.









