
Long Island University Arnold & Marie Schwartz College of Pharmacy and Health Sciences

2006-2008

Professional Program & Graduate Bulletin

*Arnold & Marie Schwartz College of Pharmacy and Health Sciences
Long Island University
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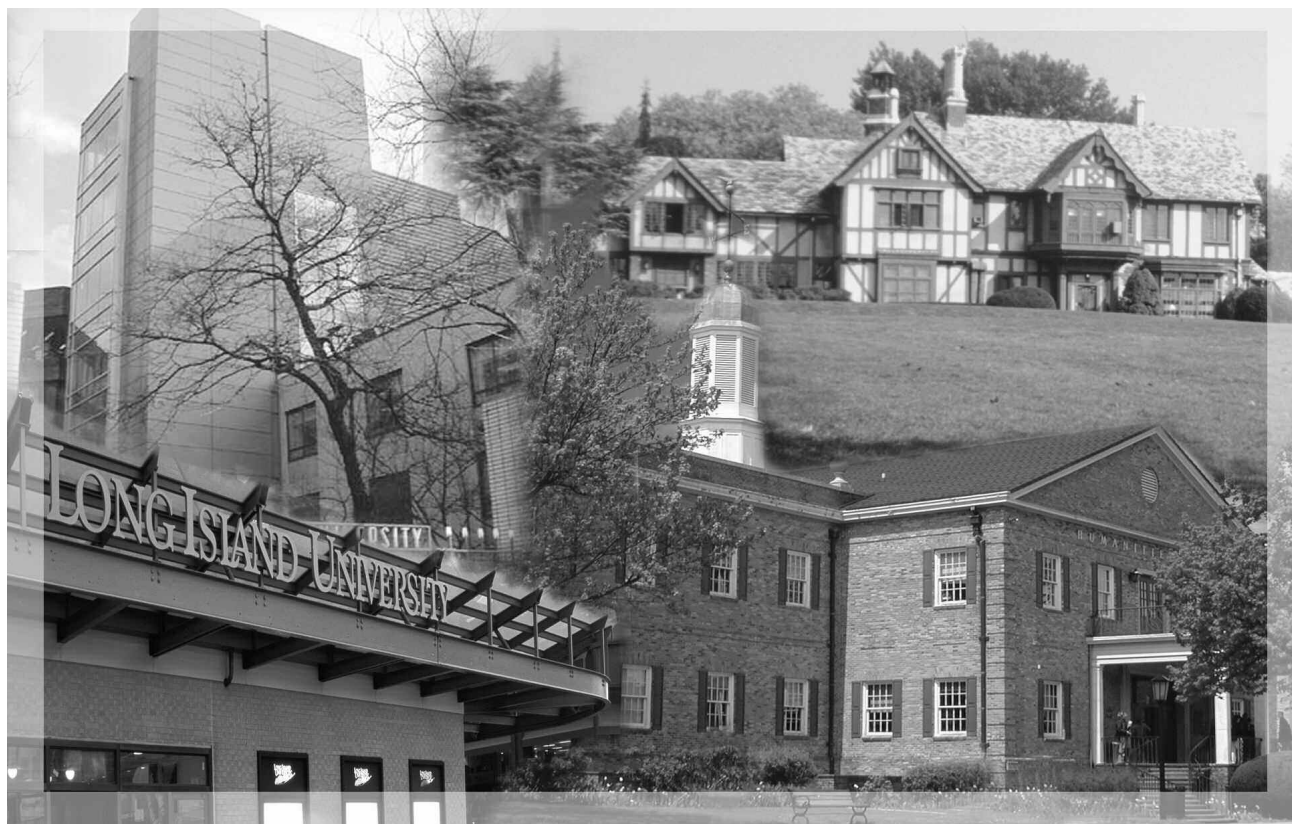
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The Arnold & Marie Schwartz College of Pharmacy and Health Sciences Professional Program & Graduate Bulletin is issued biennially. A schedule of classes is published by the Office of the Registrar for the Fall, Spring and Summer sessions.

Notice to Students. Long Island University reserves the right to delete any course described in this publication for any reason and cannot guarantee enrollment into any specific sections of courses. The University also reserves the right to effect any other changes in the curriculum, administration, tuition and fees, program offerings, or any other phase of school activity without notice. The University expects each student to have a knowledge of the information presented in the bulletin and other official publications of the various schools and campuses pertaining to his/her course of study. For further information or specific degree requirements, prospective students should call the Admissions Office and enrolled students should speak with their advisers.



LONG ISLAND UNIVERSITY

Entering its eighth decade of providing access to the American dream through excellence in higher education, Long Island University is a multicampus, diverse, doctoral institution of higher learning. One of the largest and most comprehensive universities in the country, it offers more than 600 undergraduate, graduate and doctoral degree programs and certificates, and educates more than 18,600* credit students in Brooklyn, Brookville (C.W. Post), Southampton, Riverhead, Brentwood, Rockland and Westchester. The Arnold & Marie Schwartz College of Pharmacy and Health Sciences prepares students for successful careers in the fields of pharmacy and health care. The Global College of Long Island University, (formerly the Friends World Program), offers a wide range of study abroad options at overseas centers in China, Costa Rica, Japan and South Africa.

Long Island University's more than 650 full-time faculty members provide outstanding instruction, which is supplemented by internships and cooperative education opportunities. The accomplishments of more than 162,000 living alumni are a testament to the success of its mission - providing the highest level of education to people from all walks of life. The University's NCAA Division I and II athletic teams, nationally renowned George Polk Awards in journalism, Tilles Center for the Performing Arts and Long Island University Public Radio Network (WLIU-FM and WCWP-FM) provide enrichment for its students and the communities it serves.

Arnold & Marie Schwartz College of Pharmacy and Health Sciences


Established in 1886, the Brooklyn College of Pharmacy became affiliated with Long Island University in 1929. In 1976, the College became a fully integrated unit of the University and was renamed the Arnold & Marie Schwartz College of Pharmacy and Health Sciences. One of the oldest and largest schools of its kind in the country, the College is located on the Brooklyn Campus and boasts an illustrious roster of alumni, including pharmacy professionals who are at the top echelons of their fields, and at the forefront of groundbreaking developments in the pharmaceutical industry. The College educates nearly one quarter of the pharmacists in New York State.

Accreditation and program registration. Long Island University is accredited by the Commission on Higher Education of the Middle States Association of Colleges and Schools, 3624 Market Street, Philadelphia, PA 19104, (215) 662-5606. The Commission on Higher Education is an institutional accrediting agency recognized by the U.S. Secretary of Education and the Council for Higher Education Accreditation. The degree and certificate programs also are approved and registered by the New York State Department of Education.

*This number includes high school students enrolled in one or more degree-credit courses.

COLLEGE OF PHARMACY AND HEALTH SCIENCES BULLETIN 2006-2008

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CAMPUSES OF LONG ISLAND UNIVERSITY

The Residential Campuses

Brooklyn Campus

The Brooklyn Campus is distinguished by dynamic curricula reflecting the great urban community it serves. Distinctive programs encompass the arts and media, natural sciences, business, social policy, urban education, the health professions, pharmacy and health sciences, all on a pluralistic campus that draws insight and strength from differences. The Campus offers Ph.D. programs in clinical psychology and pharmaceuticals, the D.P.T. in physical therapy and the Pharm.D. in pharmacy. In the last five years, faculty and staff members have secured more than \$13 million in research and scholarly grants from the National Science Foundation, the National Institutes of Health and other federal agencies.

Founded in 1926, the Brooklyn Campus is the original unit of Long Island University and the only one in New York City. Its 11-acre site in downtown Brooklyn is convenient to all subway lines, many bus lines and the Long Island Rail Road.

The Brooklyn Campus offers 196 undergraduate, graduate and certificate programs. Serving 8,404* credit students, its academic units include the Richard L. Conolly College of Liberal Arts and Sciences; the School of Business, Public Administration and Information Sciences; the School of Education; the School of Nursing; the School of Health Professions; and the Arnold & Marie Schwartz College of Pharmacy and Health Sciences. It is known for its nationally recognized Honors Program.

In 2005, the Campus opened a new performing arts complex, which includes the 320-seat Kumble Theater, and in 2006, a \$45 million Wellness, Recreation and Athletic Center, both of which serve the Campus and the community.

C.W. Post Campus

The C.W. Post Campus is distinguished by programs of excellence with small classes in accountancy, business, information and computer science, education, public service, health professions and nursing, visual and performing arts, and liberal arts and sciences. The wooded suburban campus, only 20 miles from New York City, is home to the renowned Tilles Center for the Performing Arts, Hillwood Art Museum and WCWP-FM, a Long Island University Public Radio Network station. C.W. Post offers the Ph.D. in information studies and the Psy.D. in clinical psychology.

The Campus was established on the former estate of cereal heiress Marjorie Merriweather Post in 1954 to accommodate the growing educational needs of Nassau County following World War II. Named for breakfast cereal creator Charles William Post, C.W. Post offers its 8,494* full-time and part-time credit students a comprehensive range of 226 undergraduate and graduate degree programs and certificates.

The Campus is recognized as one of the nation's most beautiful academic settings. Modern buildings range from an acclaimed student union to an elegant library. Beautiful red-brick academic buildings, including Humanities Hall, Pell Hall/Life Science and the Kahn Discovery Center, are outfitted with wireless classrooms, major-specific laboratories and computer centers. C.W. Post's award-winning cooperative education program is nationally respected for its extensive career counseling and job placement services.

Seventeen NCAA men's and women's sports teams take advantage of C.W. Post's 70 acres of playing fields. Clubs, fraternities and sororities provide many other outlets for student activities. C.W. Post's \$18 million Pratt Recreation Center is a state-of-the-art health and fitness facility featuring an eight-lane swimming pool, three full-size basketball courts, racquetball courts and an elevated jogging track.

Tilles Center for the Performing Arts, Long Island's premier concert facility, brings Carnegie Hall and Lincoln Center to the Campus with world-class jazz, rock, folk music, dance, mime, orchestral and chamber music performances.

The Regional Campuses

Brentwood Campus

The Brentwood Campus of Long Island University has been offering undergraduate and graduate programs to residents of Suffolk County, Long Island since 1959. The Campus, which serves a total enrollment of 903 graduate and undergraduate credit students, is located on Second Avenue in Brentwood, on 172 acres of tree-lined property owned by the Sisters of St. Joseph.

Graduate program offerings include criminal justice (Fast Track M.S.) and education (M.S./M.S.Ed.) in the areas of school counseling, mental health counseling, early childhood, childhood, childhood/special education childhood/literacy, special education and literacy.

Graduate courses are offered in conjunction with a number of different programs at the C.W. Post Campus, including business administration and library and information science. The Campus also offers an undergraduate program in criminal justice.

Classes are small and personalized. Students take advantage of a full range of computer and library facilities by networking to the University's mainframe systems. The Campus schedules most of its courses during late afternoons, evenings and on weekends.

*This number includes high school students enrolled in one or more degree-credit courses.

Rockland Graduate Campus

The Rockland Graduate Campus offers courses that are diverse and classes that are small. For more than 25 years, the Campus has been offering residents in the Lower Hudson Valley Region a Long Island University master's degree or certificate with the assurance that it comes from a recognized and respected educational institution.

Conveniently located in Orangeburg, New York, the Campus offers personalized instruction delivered by a full-time faculty and adjunct professors drawn from the top ranks of their professions. Most courses are offered at night and on weekends to accommodate the busy schedules of working professionals.

The Rockland Graduate Campus library features an online computer card catalogue that lists holdings at all Long Island University campuses, which are available to Rockland students, as well as access to electronic Internet resources, including several on-site, full-text databases. Information is instantly available through two computer labs, which are networked to the University's mainframe system.

A bachelor's degree from an accredited institution is required for admission to the Rockland Graduate Campus. Many of the graduate programs permit changes in major from undergraduate studies.

The Rockland Graduate Campus offers master's degrees and programs in business administration (M.B.A.), with concentrations in finance and management; health administration (M.P.A.); education; adolescence education (M.S.Ed.) school counselor (M.S.), special education (M.S.Ed.), literacy (M.S.Ed.), childhood education (M.S.Ed.), school building leader (M.S. Ed.), mental health counseling (M.S.); and pharmaceuticals (M.S.).

Southampton Graduate and Riverhead Campuses

Long Island University provides quality higher education to residents of Long Island's East End at two exceptional locations. Long Island University's Riverhead site, conveniently based on Suffolk County Community College's Eastern Campus, just 10 minutes from exit 70 of the Long Island Expressway, offers master's level courses in childhood education, literacy education and teaching students with disabilities. The Riverhead extension site also is home to the University's Homeland Security Management Institute, which offers one of the nation's first Master of Science degrees in Homeland Security Management as well as an advanced certificate in the discipline.

The Southampton Graduate Campus, located in the heart of the world-famous Hamptons, is home to the School of Continuing Education, which provides credit and non-credit courses for career advancement and personal enrichment. In addition, Long Island University Public Radio Network WLIU 88.3, broadcasts original local news coverage, jazz and entertainment programming to East End residents as well as those living in Southern Westchester and Connecticut from this location. Programs at the Riverhead site and at Southampton Graduate Campus are accredited by the Commission of Higher Education of the Middle States Association of Colleges and Secondary Schools.

Westchester Graduate Campus

Since 1975, Long Island University has been offering graduate degree programs in Westchester County. The Westchester Graduate Campus is located on the grounds of Purchase College of the State University of New York. The facility features high-tech classrooms designed for adult learners, technologically advanced library facilities, mainframe-networked computer labs and other resources.

Students enroll at the Campus as degree candidates or as non-degree students who wish to pursue graduate courses for personal enrichment and/or professional advancement. Most classes are held in the late afternoons, in the evenings and on the weekends to meet the scheduling needs of working adults.

Program offerings include education in the areas of early childhood (Birth-Grade 2), childhood (Grades 1-6), middle childhood and adolescence (Grades 5-12), special education, literacy, bilingual, TESOL, school counseling, school psychology; marriage & family therapy, and mental health counseling; library and information science; and business administration (M.B.A.).

ARNOLD & MARIE SCHWARTZ COLLEGE OF PHARMACY AND HEALTH SCIENCES

More Than a Century of Tradition

The Arnold & Marie Schwartz College of Pharmacy and Health Sciences, the oldest unit of Long Island University, was established in 1886 as the “Brooklyn College of Pharmacy” by the Kings County Pharmaceutical Society. Objectives of the Society in creating the College included the following “...to improve the science and art of pharmacy by diffusing knowledge among the apothecaries and druggists, fostering pharmaceutical literature, developing talent for pharmaceutical pursuit and investigation, and stimulating discovery and invention in the several departments of the drug business.”

The College has completed more than 100 years of service to the state and the nation in the education of more than 20,000 undergraduate and graduate students, many of whom have attained prominence in pharmacy and the other health professions.

Vision Statement

In 1929, the Brooklyn College of Pharmacy affiliated with Long Island University, now the eighth largest independent university in the United States. Located, since 1979, on the University's Brooklyn Campus, the Arnold & Marie Schwartz College of Pharmacy and Health Sciences attracts a diverse student population that strives to grow personally, intellectually and professionally in pharmacy and related fields.

The College serves as an urban leader in pharmacy education through its pursuit of excellence and innovation in teaching, scholarship and service. Forging alliances and partnerships with health-care providers and the pharmaceutical industry, the College has created a rich

mosaic of programs that elevate student aspirations and are responsive to the health-care needs of society.

As an advocate for an expanded scope of pharmacy practice, the College creates new paradigms for collaborative practice models that will shape the future of the profession of pharmacy.

Mission Statement

The mission of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences is to use and develop its resources for the benefit of its several constituencies through the provision of services that encompass education, research and professional activities as they relate to the wide spectrum of pharmacy care delivery systems. These constituencies are identified as students, faculty and staff, alumni and other practitioners, the pharmaceutical industry, and the recipients of pharmacy services.

Central to this goal is the focus of preparing students to practice pharmaceutical care in any setting, while also providing them with the tools to adapt to a rapidly changing and evolving health-care system. The College seeks to contribute to the expanding scope of pharmacy practice through legislative initiatives and leadership, and the development of primary-care residency programs. Embracing the philosophy of pharmaceutical care as a patient-centered, outcomes-oriented pharmacy practice, the entry-level Doctor of Pharmacy degree program utilizes innovative teaching methods to encourage active learning and the development of critical thinking and problem-solving skills.

Underpinning the attainment of specific curricular outcomes, entry-level pharmacy education is expected to impart the attributes of responsible and informed citizenry, the cultivation of ethical and cultural values, and the development of leadership skills.

In support of the pursuit of excellence in professional education, the College seeks to create an environment that encourages creativity and scholarship, and fosters faculty development and professional growth. Graduate programs are offered in the pharmaceutical, social and administrative, and biomedical sciences, as well as in professional practice areas to provide students with opportunities for enhanced career growth and to extend the boundaries of knowledge in the several disciplines.

The continuum of learning is addressed through the College's commitment to developing an appreciation of life-long



learning among current students, as well as through an active program of continuing education for practitioners that is attuned to changing pharmacy practice needs and employs strategies that are specific to adult learners.

Implicit in this mission is the acknowledgment and understanding that the College serves the largest metropolitan area in the United States, enriched by cultural diversity and an urban environment. This guides strategic planning and the formation of policy.

Career-oriented Programs

All programs of the College of Pharmacy are career-oriented. Curricula are evaluated at regular intervals to ensure that they reflect contemporary trends and emphases in medical and health-care practices. Students are afforded both didactic and experiential programs in a variety of settings in order to prepare them for leadership positions in the health-care delivery system. The heavy concentration of pharmaceutical industry and health-care institutions in the New York Metropolitan area provides unusual opportunities for both study and practical experience.

The entry-level professional program is comprised of a preprofessional phase in science, mathematics and the humanities, and a professional phase that together prepare students for entry into a variety of career possibilities and lay the foundation for more specialized and advanced graduate study.

The graduate programs are designed to provide the theoretical and conceptual framework that is inherent in advanced studies, and to promote the development of specific skills in various areas of the health-care industry. Consequently, the programs have two major and consistent objectives: first, the pursuit of scholarly

achievement; second, the enhancement of career mobility. This integrated approach provides students with unique opportunities to concentrate their efforts in areas that are productive and fulfilling.

Evening and Summer Graduate Offerings

The graduate offerings are designed to accommodate individuals who are seeking to advance their professional, scientific and technical competencies. Courses are offered in the evening hours to permit, and encourage, part-time studies. When enrollment warrants, graduate courses are offered during the summer in either of the two six-week summer sessions.

Professional and Graduate Degrees

The College offers the entry-level Doctor of Pharmacy (Pharm.D.) degree and the following graduate programs: Doctor of Philosophy in Pharmaceutics (Ph.D.), and the Master of Science degree with specializations in Pharmaceutics, Industrial Pharmacy, Cosmetic Science, Pharmacy Administration, Drug Regulatory Affairs, and Pharmacology/Toxicology.

Graduate Courses Offered at Long Island University's Rockland Graduate Campus

Graduate courses in pharmaceutics, industrial pharmacy and cosmetic science listed in this bulletin are also offered at Long Island University's Rockland Graduate Campus. Students who work or live in this area may wish to take advantage of these course offerings. It is possible to register and apply at the University's Brooklyn or Rockland Campuses. Courses taken at these campuses are interchangeable. For additional information about these programs, phone (718) 488-1234 or (718) 488-1012.

Accreditation and Recognition

The College is a member of the American Association of Colleges of

Pharmacy, an association devoted to promoting the best interests of pharmaceutical education. All member institutions must maintain certain standards for admission, course of study, graduation, laboratory and library facilities, and qualifications of faculty members.

The entry-level Doctor of Pharmacy (Pharm.D.) program is accredited by the Accreditation Council for Pharmacy Education, 311 West Superior Street, Suite 512, Chicago, IL 60610-3537, 312/664-3575, 800/533-3606; FAX 312/664-4652, web site www.acpe-accredit.org The Council is sponsored by the American Pharmaceutical Association, the National Association of Boards of Pharmacy and the American Association of Colleges of Pharmacy.

Continuing Professional Education

The College serves pharmacists and other health professionals by providing numerous seminars throughout the metropolitan area featuring outstanding lecturers covering a wide range of subjects. The College also sponsors several home-study continuing education programs, which are distributed to pharmacists throughout the nation. For additional information, call (718) 488-1065.

The International Drug Information Center (I.D.I.C.)

The International Drug Information Center (IDIC) of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences, Long Island University, serves the drug-information needs of pharmacists and other health-care professionals. The IDIC is a source of information for the latest reports, articles and bulletins about medications. Established in 1974, the IDIC provides information about drugs and their proper use to a growing list of subscribers, including community, hospital and nursing home pharmacists; physicians, nurses, and related health-care professionals; and institutional and organizational clientele. The IDIC maintains a comprehensive library of resources, both electronic and print, containing information on U.S., foreign and investigational prescription and non-prescription medications. Additionally, many online services are

utilized to access and obtain medical/pharmaceutical information. The IDIC is staffed by drug-information specialists, clinical pharmacists and pharmacologists who are experienced in evaluating the vast medical and pharmacy literature. The faculty and staff are actively involved in research within the field of drug information and publish on a national level. The IDIC has a strong academic component, and is utilized as part of the curriculum for the professional program of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences.

Salena Library Learning Center

The Center provides extensive reading areas, a complete audiovisual production and distribution center, lecture demonstration halls, photography and graphic studios, a theatre, a television studio, computer laboratories and flexible seminar rooms furnished with a full range of educational materials. The Center's Library is part of a University-wide, electronically linked resource network of 2.8 million volumes.

The Residence Hall

Residence Life and Housing
Rodney Pink, Associate Director
(718) 488-1046
Fax: (718) 488-1548
E-mail: jerome.garner@liu.edu

Richard L. Conolly Hall, the modern 16-story residence hall at the Brooklyn Campus, contains air-conditioned standard, suite, and apartment spaces for men and women. Residence Hall amenities include: The Blackbird Cafeteria, Recreation Room, MLK Lounge, and laundry facilities. Residents have basic cable TV, Internet and wireless access.

The new 1 Hoyt Street Student Residence houses our senior and graduate students. Residents live in modern standard, suite, and apartment spaces in this landmark building. All residents have access to kitchen facilities, spacious lounges, and laundry facilities as well as basic cable, Internet and wireless access.

Further information and applications may be obtained from the Residence Hall Office, Long Island University, Brooklyn Campus, 1 University Plaza, Brooklyn, NY 11201 or by calling (718) 488-1046.

Health Services

Emergency medical care for illness or injury occurring on campus is provided for all students in the Health Services office, located in the University Towers, ground floor, (718) 246-6450. Health Services is open from Monday through Friday 9:00 a.m. to 5:00 p.m. When an ill or injured student requires assistance in going to Health Services, a security officer may be called: Ext. 55 or 1078 from an in-house phone or (718) 488-1078 from an outside phone. During evenings, weekends, holidays and other times when Health Services is closed, security may be called for assistance. In the event of a serious, life-threatening emergency, call 911 for EMS, and also security, Ext. 55 or 1078.

All entering and re-entering students are required to submit to Health Services a Long Island University Health Examination Form completed by a personal physician with proof of immunization for measles, mumps and rubella (MMR).

Publications

In addition to the Brooklyn Campus's diversified publications, the College offers:

The *Pharmakon*, or Senior Yearbook, a graduation memento published by the Senior Class;

Pharmakon II, the newsletter of the College of Pharmacy, which provides a medium for faculty and alumni opinion;

Doses & Notices, intended as a vehicle for faculty, staff and student organizations to communicate with each other about upcoming events and activities;

The *Bulletin*, for Professional and Graduate Pharmacy Programs, listing admission requirements, curricula, course descriptions and other information;

Introducing Your College of Pharmacy is a booklet updated each year with short informal biographies of the faculty, administrators and support staff of the College of Pharmacy;

The *College of Pharmacy Scholarship Recipients* is an annual booklet that lists the student recipients of pharmacy scholarships with some biographical information.

The College also publishes a series of brochures on such matters as continuing education programs and lectures by visiting scientists.



Clubs and Organizations

Students of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences have the opportunity to participate in a wide variety of pharmacy professional organizations. Several of these organizations have student chapters affiliated with the College. Additionally, students may elect to participate in professional fraternal societies and/or social clubs and organizations. The Brooklyn Campus also offers over 50 clubs and organizations for students.

Pharmacy Student Leadership Council

All full-time students in the College of Pharmacy professional program are represented by the Pharmacy Student Leadership Council. The Council consists of elected representatives from each class and serves to promote the general welfare of the pharmacy student body. All full-time students are permitted to vote in the Pharmacy Student Leadership Council elections and are invited to participate in all activities sponsored by the Council.

Professional Organizations with Local Chapters

Academy of Student Pharmacists (ASP)–The Academy of Student Pharmacists is the national professional

society of pharmacy students in the United States and an official subdivision of the American Pharmacists Association (APhA). ASP membership is open to any student regularly enrolled in a pre-pharmacy or pharmacy program in an accredited school. At present, ASP has over 12,000 members distributed over 75 colleges of pharmacy in the United States and Puerto Rico. ASP chapters provide many professional, educational and social activities for members.

American Society of Consultant Pharmacists (ASCP)–ASCP is the national professional association representing pharmacists who provide medication distribution and consultant services to patients in long-term care facilities.

The American Society of Health-System Pharmacists (ASHP)–ASHP offers a broad array of services and products to health-system pharmacists, and serves as a national accrediting organization for pharmacy residency and technician training programs. Any student interested in institutional pharmacy practice should join; benefits include Student line, a student newsletter, and special programs at ASHP national meetings.

The National Community Pharmacists Association (NCPA) was founded in 1898 as the National Association of Retail Druggists (NARD); it represents the pharmacist owners, managers and employees of nearly 25,000 independent community pharmacists across the United States. Independent pharmacists – more than 60,000 nationwide – dispense the majority of the nation's retail prescription drugs. The College of Pharmacy opened a student chapter in 2004. The student chapter offers students a wide array of opportunities to broaden and enrich their educational experience and gain valuable, real-world skills.

Student National Pharmaceutical Association (SNPhA)–SNPhA (the student group of the National Pharmaceutical Association) is a group of pharmacy students whose purpose is to plan, organize and coordinate programs geared toward the improvement of health education and the social environment of minority communities.

Professional Fraternal Societies

Alpha Zeta Omega-Iota Chapter – Alpha Zeta Omega has been chartered at the College for more than 50 years and provides both professional and social functions. This fraternity also can provide scholarships for selected students.

Lambda Kappa Sigma (LKS)-Alpha Eta Chapter – Lambda Kappa Sigma is the only international, professional fraternity for women enrolled in pharmacy. It seeks motivated female students to join its ranks, and encourages the development of its members both culturally and intellectually. LKS provides both professional and social functions throughout the academic year.

Phi Delta Chi-Beta Theta Chapter – The objective of this association is to advance the science of pharmacy and its allied interests and to foster and promote a fraternal spirit among its members.

Honorary Fraternal Societies

Rho Chi Society-Beta Theta Chapter–Rho Chi is the national pharmacy honor society which stimulates and recognizes superior scholarly achievement. Entry-level students in the upper 20% of their class who have a cumulative index of 3.50 or better are eligible for membership during their fourth year. Graduate students are eligible if they have completed at least 24 credits with a 3.50 grade-point average in addition to other requirements. Eligible students will be automatically nominated for Society membership.

Phi Lambda Sigma-Beta Kappa Chapter–Phi Lambda Sigma is the national pharmacy leadership society which promotes the development of leadership qualities among pharmacy students. To be eligible for membership, the student must be of high moral and ethical character, must have completed 96 credits of scholastic work applicable for

the pharmacy degree, and have a grade-point average of at least 2.50. Prospective members are nominated on the basis of their demonstration of dedication, service and leadership in the advancement of pharmacy. Members are selected by peer recognition.

Social and Service Organizations

The following social and service organizations on the Brooklyn Campus are notable due to the large membership of pharmacy students. For a complete listing of all student activities offered on the Brooklyn Campus, refer to the Long Island University Brooklyn Campus Student Handbook, available in the Student Activities Office (S-304).

Asian Students Association – Catering to students of Asian heritage, club activities include blood pressure screening, professional events and several social functions which include celebrating the Chinese New Year. ASA is currently involved in establishing communication among other Asian clubs in the New York area.

Hillel/Jewish Culture Club – This group consists of Jewish students from the entire Brooklyn Campus as well as the College of Pharmacy. The club meets regularly to discuss issues pertinent to Judaic culture and professionalism and to celebrate occasions important to Judaism.

Sangam, The Indian Cultural Club – Sangam's objective is to unite the people of Indian heritage or background. It is a cohesive unit for people who share the same cultural beliefs and ethics and who now also share professional goals. Its aim for the future is to continue to grow and to become more active in promoting Indian ideas to other students and faculty of the College.

Coptic Orthodox Christian Club – This group was established to provide spiritual and social support for Coptic Orthodox Christians and their friends on campus as well as educate the campus community about Orthodox Christians and the rich tradition of the Coptic Church.

Pharmaceutical Industry Student Association – This organization, also known as PISA, is for students interested in exploring career opportunities in the pharmaceutical industry by inviting guest speakers from industry on campus, by gathering and sharing information about internships and through trips to pharmaceutical companies.

Athletics

Those who desire to participate in athletic activities are given ample opportunity through a broad intramural program. Students are also eligible to participate in all University teams and athletic programs. Many of these activities are held in the Arnold & Marie Schwartz Athletic Center.

Alumni Relations

The Alumni Association of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences of Long Island University is comprised of individuals who have been granted entry-level and/or graduate degrees from the Arnold & Marie Schwartz College of Pharmacy and Health Sciences or the former Brooklyn College of Pharmacy.

The purpose of the Alumni Association is to develop and advance the interests of the College of Pharmacy, to foster and develop meaningful social and professional relationships among all members of the College family and to further the profession of pharmacy through networking and continuing education programs.

Working with the Office of Development and Alumni Relations, the Association strives to improve life at the College by coordinating special events, including: the yearly Alumni Induction Ceremony where graduating seniors are awarded their official College of Pharmacy Pins, Pharmacy Day, the College's Annual Homecoming, and the All-Class Reunion Dinner Dance honoring special anniversary classes.

The Office of Development and Alumni Relations maintains the database of alumni information, administers the alumni scholarship program, directs annual appeals to alumni and provides staff support to the Alumni Association Board and members.



GENERAL INFORMATION

The Brooklyn Campus

Statement of Mission

Expressed in its still relevant motto - *Urbi et Orbi* - the mission of Long Island University since 1926 has been to open the doors of the city and the world to men and women of all ethnic and socioeconomic backgrounds who wish to achieve the satisfaction of the educated life and to serve the public good. Its mission is to awaken, enlighten and expand the minds of its students. Generation after generation, the students who have enrolled in the Brooklyn Campus of Long Island University have come from varied, primarily urban, backgrounds. Like their predecessors, many of today's students are new to America and new to the English language or are the first in their families to seek a university education. At the Brooklyn Campus, all students find an academic community where cultural, ethnic, religious, racial, sexual and individual differences are respected and where commonalities are affirmed. Such a stance requires the campus to be open and welcoming, even as it maintains respect for intellectual, cultural and academic traditions. Nationally recruited, the faculty has a strong commitment to teaching, to personal advisement of students, to the fullest range of scholarship, and to faculty development and service.

The Brooklyn Campus recognizes both the faculty's training and experience and

the character of its diverse student body as two of its greatest strengths and challenges. No matter what their background or generation, students come to the Brooklyn Campus to build the educational and intellectual foundations for successful personal lives and careers. The Campus faculty and administration believe that a liberal education, along with careful preparation for a fulfilling career, is the best way to achieve that end.

To carry out its mission, the Brooklyn Campus offers comprehensive undergraduate curricula, supported by advanced courses for specialized knowledge and graduate programs in those areas in which it has developed strength or has a unique contribution to make. In addition, the Campus designs programs to permit students to acquire essential literacies, intellectual curiosity, analytic and reasoning skills, and effective communication skills. By doing so, the Campus serves as a conservator of knowledge, a source and promulgator of new knowledge, and a resource for the community it serves.

Undergraduate and Graduate Offerings

Richard L. Conolly College offers liberal arts and sciences programs leading to the degrees of Associate in Arts, Bachelor of Arts, Bachelor of Fine Arts, Bachelor of Science, Master of Arts, Master of Fine Arts, Master of Science, Master of Science in Education, Master of Social Work, and Doctor of Philosophy (in Clinical Psychology). It also offers a B.S./M.S. in Communication Sciences and Disorders/Speech-Language Pathology, and an Advanced Certificate in United Nations.

The School of Business, Public Administration and Information Sciences offers, on the undergraduate level, the degrees of Associate in Applied Science in Business Administration; Bachelor of Science in Accounting, Computer Science, Integrated Information Systems, Finance, Management, and Marketing. On the graduate level, the School offers the Bachelor of Science/Master of Science in Accounting; Master of Business Administration (M.B.A.); Master of Science in Accounting, Computer Science, Human Resources Management and Taxation, and Master of Public Administration (M.P.A.). It also offers undergraduate Certificates in Accounting and Computer Science, and Advanced Certificates in Business Administration, Gerontology, and Not-for-Profit Management.

The School of Education offers, on the undergraduate level, the Bachelor of Arts and the Bachelor of Science degree. On the graduate level, the school offers the Master of Science in Education degree in the areas of Elementary, Secondary, Bilingual and Special Education and TESOL, Reading Teacher, School Counselor and School Psychologist; the Master of Science degree in Mental Health Counseling and Education Technology for the Learning Sciences; and Advanced Certificates in Bilingual Education, Educational Leadership, Early Childhood Urban Education, Bilingual Teacher of Speech and Hearing Handicapped, and Teaching Literacy.

The School of Health Professions offers the Bachelor of Science degree in Physician Assistant Studies, Respiratory Care, and Sports Sciences. It also offers combined B.S./M.S. degrees in Athletic Training and Sports Sciences and Occupational Therapy and the M.S. in Health Sciences. The Division of Physical Therapy offers a Doctor of Physical Therapy (D.P.T.) program that is a three-year post-baccalaureate graduate degree.

The School of Nursing offers the Bachelor of Science with a major in Nursing; the Master of Science and Advanced Certificates in Nursing: Adult, Family or Geriatric Nurse Practitioner; an accelerated R.N./B.S./M.S. Adult Nurse Practitioner degree; and the Master of Science: Nurse Executive and Health Care Management; and an Advanced Certificate in Nursing Education.

The **Arnold & Marie Schwartz College of Pharmacy and Health Sciences** offers an entry-level, six-year Doctor of Pharmacy (Pharm.D.) degree and the Master of Science degree in Pharmaceutics, Pharmacy Administration, Drug Regulatory Affairs and Pharmacology/Toxicology. It also offers the Doctor of Philosophy in Pharmaceutics (Ph.D.) degree.

Information and applications for admissions for all programs may be obtained from the Admissions Office, Brooklyn Campus, Long Island University, 1 University Plaza, Brooklyn, NY 11201-5372; (718) 488-1011.

Directory

ADMINISTRATION

- DEAN—Stephen M. Gross, B.S., M.A., Ed.D.
Rm. L108; M-F (9-5); (718) 488-1004
- ASSOCIATE DEAN—Nouri Y. Mary, Ph.C., M.S., Ph.D.
Rm. L130A; M-F (9-5); (718) 488-1236
- ASSOCIATE DEAN FOR Continuing Professional Education and External Programs—
Robert L. Lantos, B.S., M.S.
Rm. L207; M-F (9-5); (718) 488-1065
- ASSOCIATE DEAN FOR ACADEMIC AND STUDENT AFFAIRS—Martin E. Brown, B.S., M.S.
Rm. L130E; M-F (9-5); (718) 488-1240
- ASSISTANT DEAN FOR EXPERIENTIAL EDUCATION—
Harold L. Kirschenbaum, B.S., M.S., Pharm.D.
Rm. HS504; M-F (9-5); (718) 488-3371
- ASSISTANT DEAN FOR ADMINISTRATION—
Anneliese B. Schumacher, B.A.
Rm. L108; M-F (9-5); (718) 488-1228
- DIRECTOR, STUDENT AND PROFESSIONAL ACTIVITIES—Patrick J. Campbell, B.A., M.A.
Rm. L123; M-F (9-5); (718) 488-1241
- DIRECTOR, PROGRAM SUPPORT SERVICES—
Aruna Kissoon, B.A., M.S.
Rm. L136; M-F (9-5); (718) 780-4560
- COORDINATOR OF EXPERIENTIAL EDUCATION—
Sadaf A. Durrani, B.S., M.S.
Rm. HS503; M-F (9-5); (718) 488-1232
- DIRECTOR, PHARMACY ACADEMIC SERVICES—
Cheryl Evans, B.A., M.S., Ed.D.
Rm. L130D; M-F (9-5); (718) 488-1238
- ACADEMIC COUNSELOR—
Judith Pierce, B.A., M.A.
Rm. L130B; M-F (9-5); (718) 488-1693
- ACADEMIC ADVISER—
Stephanie Scott Marshall, B.A.
Rm. L130B; M-F (9-5) 488-1235
- COORDINATOR OF PHARMACEUTICAL STUDY CENTER—Orlando Ross
Rm. L303; M-F (9-5); (718) 246-6359
- MUSEUM DIRECTOR AND HISTORIAN
Michael R. Harris, B.S., M.S.
Rm. L108; (718) 488-1004

ADMISSION—

Rm. S101; M-F (8:30-5); (718) 488-1011

ALUMNI AND DEVELOPMENT—

Drew Kaiden, B.A., Director;
Rm. L208; M-F (9-5:30); (9-5) summer hours;
(718) 488-1250

BURSAR—Patricia Connors, B.A., M.B.A.

Rm. M312; M, Th, F (9-2), Tu, W (1-6:30);
(718) 488-1038

CAMPUS SECURITY—Selvin Livingstone, Director;
Rm. M Lobby Rear; 24 hours a day; (718) 488-1078

OFFICE OF INSTITUTIONAL ADVANCEMENT

Kim A. Williams, B.S., J.D.
Rm. M 408C; M-F (9-5); (718) 488-1602

OFFICE OF STUDENT FINANCIAL SERVICES

Rose Iannicelli, A.A., B.A., M.S.
Rm. S310; M, Th, F (9-2), Tu, W (1-6:30);
(718) 488-1037

HEALTH SERVICES—Diane Green, R.N.

University Towers, Ground Floor
M-F (9-5); (718) 246-6450

INFORMATION TECHNOLOGY—Kamel Lecheheb, Ph.D.

Rm. LLC234; M-Th (9-9:45), F (9-5:45), Sat. (9-5:45),
Sun. (9-9:45);
(718) 488-1082 or (718) 488-1301 (computer lab)

INTERNATIONAL STUDENTS—

Steven A. Chin, B.S., M.B.A.
Rm. M304; M, Th, F (9-5), Tu, W (9-6:30);
(718) 488-1216

REGISTRAR

Thomas P. Castiglione, B.A., M.S.Ed.
Rm. S101; M, Th, F (9-5); Tu, W (10:30-6:30);
(718) 488-1013

RESIDENCE LIFE AND HOUSING

Rodney Pink, B.A., M.S.
M-F (9-7) (summer hours), M-F (9-5); (718) 488-1046

SPECIAL EDUCATIONAL SERVICES, ACHIEVEMENT STUDIES AND RENAISSANCE SERVICES

Jeffrey W. Lambert, B.S., M.A. (Ed.)
Rm. L Basement; M-F (9-5), evening hours by appointment;
(718) 488-1044

STUDENT ACTIVITIES—

Karlene Jackson Thompson, B.A., M.A., M.S.
Rm. S304; M, Th, F (9-5), Tu, W (9:30-6:30);
(718) 488-1216

PHARMACY OFFICE: M-F (9-5); (718) 488-1234

GENERAL INFORMATION: M-F (8:45-6); (718) 488-1000

Location

The Arnold & Marie Schwartz College of Pharmacy and Health Sciences of Long Island University is located at DeKalb Avenue and Flatbush Avenue Extension in Brooklyn, New York, on the University's Brooklyn Campus. It is served by all subway and many bus lines and can be easily reached by public transportation from almost any point in New York City. In the heart of downtown Brooklyn, the College is only a few minutes away from the Brooklyn Bridge and lower Manhattan.

Campus Map

See page 99 for campus map and travel directions.

Academic Calendar 2006-2007

FALL 2006

In-person registration.....Wednesday-Friday,
August 30 - September 1 AND
Tuesday-Wednesday September 5-6

Labor Day-holiday.....Monday, September 4

Weekday classes begin.....Thursday, September 7

Late registration and program changes.....Thursday-Friday,
September 7-8 AND
Monday-Wednesday, September 11-13

Semester classes meeting
Saturday-Sunday begin.....Saturday-Sunday,
September 9-10

First weekend session classes beginSaturday-Sunday,
September 9-10

Late registration ends.....Wednesday, September 13

Awarding of September degrees.....Friday, September 22

Last day to apply for January degreeFriday, September 29

Last day to apply for
comprehensive examinationFriday, September 29

Deferred final examinationsMonday, October 2

Midterm examinations—classes in session.....Monday-Friday,
October 9-20

First weekend session final examinationsSaturday-Sunday,
October 21-22

Second weekend session classes beginSaturday-Sunday,
October 28-29

Last day to withdraw from
undergraduate coursesWednesday, November 1

Election Day—classes in sessionTuesday, November 7

Program guidance for Spring 2007Monday-Friday,
November 13-17

Last day to submit thesis and
complete degree requirementsWednesday, November 22

Fall recess beginsThursday, November 23

Classes resumeSaturday, November 25

Second weekend session final examinationsSaturday-Sunday,
December 9-10

Semester classes meeting
Saturday-Sunday endSaturday-Sunday,
December 9-10

Semester classes meeting
Monday through Friday endFriday, December 15

Last day to withdraw from
graduate courses.....Friday, December 15

Final examinations—undergraduate
and graduateSaturday-Friday,
December 16-22

Last day to complete withdrawal
appeal processFriday, December 22

Winter recess beginsSaturday, December 23

SPRING 2007

In-person registrationTuesday-Friday, January 9-10 AND
Monday, January 15

Awarding of January degreesFriday, January 12

Martin Luther King, Jr. Day.....Monday, January 15

Weekday classes beginTuesday, January 16

Late registration and program changesTuesday-Friday,
January 16-19 AND
Monday, January 22

Semester classes meeting
Saturday-Sunday begin.....Saturday-Sunday,
January 20-21

First weekend session classes
beginSaturday-Sunday, January 20-21

Late registration ends.....Monday, January 22

Deferred final examinations.....Monday, February 5

Last day to apply for May degreeMonday, February 5

Last day to apply for comprehensive
examinationFriday, February 9

Presidents' Day—no classesMonday, February 19

Tuesday follows a Monday scheduleTuesday, February 20

Midterm examinations—classes in session.....Monday-Friday,
February 26-March 9

First weekend session final examinationsSaturday-Sunday,
March 3-4

Second weekend session classes beginSaturday-Sunday,
March 10-11

Spring recess beginsMonday, March 12

Classes resumeMonday, March 19

Last day to withdraw from
undergraduate courses.....Wednesday, March 28

Program guidance for Summer and Fall 2007.....Monday-Friday,
April 2-6

Last day to submit thesis and
complete degree requirementsFriday, April 13

Second weekend session
final examinationsSaturday-Sunday, April 28-29

Semester classes meeting
Saturday-Sunday endSaturday-Sunday, April 28-29

Semester classes meeting
Monday through Friday endTuesday, May 1

Last day to withdraw from graduate coursesTuesday, May 1

Study dayWednesday, May 2

Final examinations—
undergraduate and graduateThursday-Wednesday, May 3-9

Last day to complete withdrawal
appeal process.....Wednesday, May 9

CommencementFriday, May 11

SUMMER I 2007

Registration and program changes ..Thursday-Friday, May 10-11

Weekend session classes beginSaturday-Sunday, May 12-13

Weekday classes begin.....Monday, May 14

Late registration endsTuesday, May 15

Memorial Day—holiday.....Saturday-Monday, May 26-27

Last day to withdraw from
undergraduate coursesTuesday, May 29

Deferred final examinationsMonday, June 4

Last day to apply for September degree.....Wednesday, June 13

Last day to apply for comprehensive
examinationWednesday, June 13

Weekend session
final examinationsSaturday-Sunday, June 23-24

Last day of class.....Monday, June 25

Last day to withdraw from graduate courses.....Monday, June 25

Last day to complete withdrawal
 appeal processMonday, June 25
 Final examinationsLast class meeting

SUMMER II 2007

Registration and program changesWednesday-Thursday,
 June 27-28

No registration or program changes.....Friday, June 29

Weekday classes beginMonday, July 2

Late registration endsTuesday, July 3

Independence Day—holidayWednesday, July 4

Weekend session classes beginSaturday-Sunday,
 July 7-8

Monday follows a Wednesday scheduleMonday,
 July 9

Last day to withdraw from
 undergraduate coursesWednesday, July 18

Weekend session final examinationsSaturday-Sunday,
 August 11-12

Last day to submit thesis and
 complete degree requirementsMonday, August 13

Last weekday class.....Monday, August 13

Last day to withdraw from graduate coursesMonday, August 13

Last day to complete withdrawal
 appeal processMonday, August 13

Final examinationsLast class meeting

PROFESSIONAL PROGRAM

The Arnold & Marie Schwartz College of Pharmacy and Health Sciences offers a six-year Doctor of Pharmacy (Pharm.D.) degree program to prepare students for entry-level pharmacy practice. The program consists of two years of preprofessional studies and four years of professional studies.



Professional Curriculum for the Six-year Doctor of Pharmacy (Pharm.D.)

Professors Babar, Cutie, Dolinsky, Feifer, Gross, Jochsberger, Kirschenbaum, Mary, Patel, F. Plakogiannis, Ratna, Ray, Reid, J.M. Rosenberg
Associate Professors Bellantone, Cheng, Cicero, H. Cohen, DiGregorio, Lantos, Lonie, Najib, Papadopoulos Quattrocchi, Savva, Sidhom, Taft
Assistant Professors Antonopoulos, Borowski, Chagan, Chawla, V. Cohen, Fidler, Gim, Joseph, Kourlas, Maltz, Marzella, Mehta, Nathan, Nogid, D. Pham, R. Plakogiannis, Rahim, Rivkin, Shah, Sharma, Stagni, Tom-Revzon, Vansal, Wu, Yuan
Instructor Pyon

Introduction

The Arnold & Marie Schwartz College of Pharmacy and Health Sciences offers a six-year curriculum leading to the entry-level degree of Doctor of Pharmacy (Pharm.D.). Students may enter the professional phase of the program in the Fall semester only.

The Doctor of Pharmacy program consists of four years of undergraduate-level study and two years of graduate-level study. Students completing the Doctor of Pharmacy program do not earn a baccalaureate degree after completing the program or prior to beginning the graduate-level phase of the program.

Degree Requirements

Upon recommendation of the faculty, and approval by the Board of Trustees, the degree of Doctor of Pharmacy is conferred by Long Island University upon a candidate who has completed the required curriculum, containing a minimum of 203 academic credits. Matriculants must maintain a cumulative and a professional phase grade-point average of at least 2.0 to remain in good academic standing. In addition, all students on the Brooklyn Campus, including pharmacy students, are required to demonstrate computer proficiency as a requirement towards the attainment of a degree. All entering freshmen students are encouraged to take the

Brooklyn Campus proficiency examinations in computer literacy before registering. The examinations are administered by the Brooklyn Campus Testing Center and all students must successfully complete these examinations as part of the requirements for a degree. Transfer students are also required to pass these examinations or will be granted appropriate waivers at the time of the evaluation of their transfer credits.

All students on the Brooklyn Campus must satisfy the requirements of the Writing Across the Curriculum Program (WAC). To fulfill the minimum WAC requirements, students must complete, in addition to English 16 and Core Seminar 50, at least one writing-intensive course in their discipline. Pharmacy students will be notified as to which professional phase pharmacy course(s) satisfies the WAC requirements.

The Profession of Pharmacy

Dramatic changes taking place in the health-care system are creating many new and exciting roles for pharmacists. Fundamental to the changing role of the pharmacist is the evolving concept of pharmaceutical care, which has been defined as “the responsible provision of drug therapy for the purpose of achieving definite positive outcomes that improve a patient’s life.” The pharmacist is now not only responsible for the safe and effective distribution of prescription and nonprescription medication, but is also assuming the role of pharmaceutical therapy advisor and manager, having increasingly more patient-care responsibilities.

Under the paradigm of pharmaceutical care, the entry-level pharmacist is expected to participate fully in the management of the patient, including the rendering of independent clinical judgments. The pharmacist must be proficient in the search for and retrieval of information from the scientific literature, utilization of complex pharmacokinetic models to determine appropriate doses, development of individualized pharmaceutical care plans, communication with patients and health professionals, documentation of pharmaceutical interventions taking into account patients’ knowledge, beliefs, and behavior, pharmacoeconomic analysis of alternative pharmaceutical interventions, and justification of services billed to managed health-care organizations and other payers.

Curriculum Objectives

Embracing the philosophy of pharmaceutical care as a patient-centered, outcomes-oriented pharmacy practice, the Doctor of Pharmacy degree program utilizes innovative teaching methods to encourage active learning and the development of critical thinking and problem solving skills. The curriculum is designed to prepare students for the general practice of pharmacy in all practice settings, while also providing them with the tools to adapt to a rapidly changing and evolving health-care system. The program is based upon 29 curricular endpoints that reflect the requisite competencies required for contemporary pharmacy practice.

Entry-level Pharm.D. degree program—curricular endpoints

- Participate and make recommendations in the drug use decision-making process, including whether drug therapy is appropriate in a specific situation
- Select the appropriate prescription and/or nonprescription product
- Select the appropriate dosage form for a given patient situation
- Select the drug product source of supply based upon biopharmaceutic, pharmacoeconomic and quality control considerations
- Determine the appropriate dosage regimen for a given patient situation
- Prepare the pharmaceutical product for patient use
- Provide, dispense and/or administer the drug product to the patient
- Select and provide medical goods, devices and services for a given patient situation
- Counsel patients to ensure appropriate pharmaceutical care outcomes, and institute programs to maximize compliance with drug regimens and health-promotion behaviors
- Monitor patients for adverse effects and develop strategies to manage and ultimately prevent future adverse experiences
- Monitor patients to ensure that medications are producing desired therapeutic outcomes
- Provide general health education to the public
- Exhibit ethical principles in daily practice
- Apply principles of law in daily practice
- Solve problems and make decisions for

- a given patient situation
- Use management theory and information technology to plan, organize, direct and control pharmaceutical care systems and resources
 - Develop the skills necessary for life-long learning in order to improve patient outcomes
 - Integrate ideas, information and skills to provide pharmaceutical care
 - Communicate effectively with patients and other health-care professionals
 - Participate in professional governance and policy formulation while considering the issues affecting the profession of pharmacy
 - Have sufficient background to consider various careers within the profession of pharmacy
 - Be able to find, understand, analyze, evaluate and synthesize information and then make informed, rational, responsible and ethical decisions
 - Read, write, speak, listen and use data, media and computers to send and respond to communications for varied audiences and purposes effectively
 - Demonstrate sensitivity to and facility with personal values and ethical principles in professional and social contexts
 - Demonstrate a basic understanding of the strengths and problems of cultural diversity and the historic responses of society as they relate to oneself and to others
 - Effectively self-assess and satisfy learning needs on an on-going basis
 - Demonstrate effective interpersonal and intergroup behaviors in a variety of situations and circumstances
 - Demonstrate an understanding of the relationships among the arts, natural sciences and human concerns
 - Develop and implement a pharmaceutical care plan

As reflected in these endpoints, the College of Pharmacy has defined the general educational and professional outcomes and abilities expected of today's graduates. The curriculum was designed to prepare students for an entry-level position in any aspect of the profession—e.g., community practice, hospital practice, long-term care, managed care and the pharmaceutical industry. Moreover, the curriculum prepares students to continue their education through the pursuit of a graduate degree or by participating in residency and/or fellowship programs. The development of higher-level thinking, active learning, and life-long learning skills are liberally sprinkled throughout the curriculum, particularly in recitation sections, laboratories, and

the introductory and advanced practice experiences. Students are afforded the opportunity to register for elective didactic as well as elective experiential (selective) courses in order to help them pursue personal career paths.

The curriculum begins with a minimum of two years of studies in the liberal arts and sciences. Studies in the physical and biological sciences and mathematics in the preprofessional years prepare the student for studies in the pharmaceutical and biomedical sciences in the professional phase of the curriculum. Studies in the humanities and social sciences provide that common and universally accepted body of knowledge all educated men and women are expected to acquire, irrespective of vocational or professional objectives. Thus, the curriculum offers students the opportunity to develop an understanding of the relationships among the arts and sciences and to apply that understanding to human concerns in their professional and personal lives.

The professional phase of the curriculum consists of studies in the pharmaceutical and biomedical sciences that are of such depth, scope, timeliness, quality, sequence and emphasis as to provide the foundation for and support of the intellectual and clinical objectives of the professional program. Most of the courses in the biomedical and pharmaceutical sciences are part of a sequence and, as such, are coordinated within a lock-step approach, i.e., students master a given topic after which additional material is presented to bring the student to a higher level. Within each discipline, the courses are vertically and horizontally integrated and coordinated to ensure that the curricular endpoints and specific course objectives are met. Studies in the behavioral, social and administrative pharmacy sciences provide the basis for understanding and influencing human behavior in health and disease, in the management process of pharmacy, and in pharmacy's interrelationships with health-care systems. Courses in these sciences provide the knowledge, skills, abilities, attitudes and values necessary for the efficient and effective management of patient-centered practice.

Studies in pharmacy practice develop the understanding of important disease states and rational therapeutics of these conditions. The course work is designed to develop the abilities of students to utilize pathophysiologic, pharmacotherapeutic and pharmacoeconomic principles to formulate pharmaceutical care plans for patient management. Development of pharmaceutical care plans includes problem identification, data collection and

evaluation, implementation of appropriate therapy, and monitoring patient outcomes based upon the patient's biopsychosocial needs. Additionally, studies in pharmacy practice prepare the student to effectively utilize pharmaceutical information sources and data bases that are necessary, in the course of pharmacy practice, to physically assess patients who are about to receive or are receiving medications, and to administer medications via various routes such as injection and inhalation.

The experiential education components of the professional program are of such intensity, breadth and duration as to support the achievement of the curricular endpoints. Experiential education begins virtually the first day the student enters the professional program and continues until graduation. Introductory pharmacy practice experiences are offered during the early sequencing of the curriculum for purposes of providing transitional experiential activities and active learning. The introductory practice experience begins with a visitation program in the students' first professional semester and provides an orientation to the practice of pharmacy and the provision of pharmaceutical care in a number of environments. In the second professional year the introductory clerkship offers students the opportunity to develop pharmaceutical care plans for patients, counsel patients about prescription and nonprescription items, interact with health-care professionals and assist in the dispensing of prescriptions. The advanced pharmacy practice experiences in the final year of the professional curriculum provide students with active participation and in-depth experiences to acquire practice skills and judgment to develop the level of confidence and responsibility needed for independent and collaborative pharmacy practice.

These experiences serve as a capstone and require students to utilize all knowledge, skills, attitudes and behaviors previously learned. A wide range of advanced practice experiences is offered. The core experiences ensure that students have developed the competency to participate in the drug use decision making process, to select the correct medication and dosage for a given situation, to interact with health-care professionals and peers, to communicate with patients and/or care-givers, to solve issues related to the rational use of medications and document them to utilize drug information skills to respond to queries, to assist pharmacists in dispensing commercially available as well as extemporaneously prepared medications, and to develop in-

depth pharmaceutical care plans. The elective advanced practice experiences continue this process, yet allow students to fulfill individual professional needs.

Preprofessional Phase Course of Study

The preprofessional phase of the program, offered through Richard L. Conolly College, consists of a minimum of four semesters of course work in the liberal arts and sciences. Successful completion of two years of preprofessional study (P-1 and P-2) provides the foundation for admission to the professional pharmacy curriculum. The course sequence for the preprofessional phase is listed below. For course descriptions, please refer to the Brooklyn Campus undergraduate bulletin.

Credentials of students attending other colleges for the preprofessional phase of the program will be evaluated on an individual course basis, and transfer credit will be granted for those courses meeting the requirements of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences. Only those preprofessional students who meet the progression requirements, as outlined under the heading of Admission, will be admitted to the first professional year of study in the College of Pharmacy.

While the preprofessional phase of the program is designed to be completed in two academic years, students requiring proficiency and skills courses may have a lengthened course of study.

The preprofessional pharmacy curriculum consists of the following course of study:

Preprofessional Studies (Four Semesters)

First Semester

Chemistry 3 (General Chemistry I)	4
Biology 3 (General Biology I)	4
English 16* (English Composition)	3
Mathematics 30** (Precalculus)	4
Orientation Seminar 1	1
	<hr/> 16

Second Semester

Chemistry 4 (General Chemistry II)	4
Biology 4 (General Biology II)	4
Core Seminar 50	3
Mathematics 40	4
Speech 3	3
	<hr/> 18

Third Semester

Chemistry 121(Organic Chemistry I)	4
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Physics 27 (Physics for Pharmacy)	4
English 61-64 *** (English Literature)	3
History 1 or Philosophy 61 ****	3
Psychology 3 (General Psychology)	3
Pharmacy Orientation Seminar 1	1
	<hr/> 18

Fourth Semester

Chemistry 122 (Organic Chemistry II)	4
Biology 131 (Human Anatomy)	4
Economics 1 or 2 (Micro-or-Macro-economics)	3
English 61-64*** (English Literature)	3
History 2 or Philosophy 62 ****	3
	<hr/> 17

* Students are admitted into English 16 by placement examination or exemption from English 13, 14.

** *Mathematics placement examinations are required to determine prerequisites, if any.*

*** *All Pharmacy students must successfully complete two courses from the English 61, 62, 63, 64 sequence.*

**** *All Pharmacy students must successfully complete both Philosophy 61 and 62 or History 1 and 2. Students may not select one course from the Philosophy sequence and one course from the History Sequence. The College of Pharmacy strongly encourages Pharmacy students to complete the Philosophy 61 and 62 sequence.*

Professional Phase Course of Study

The professional segment of the Doctor of Pharmacy program consists of six semesters of didactic and early experiential course work and an extramural sixth year of 30 weeks of advanced practice experiences, which students complete in hospital, community and other pharmacy practice settings. The professional program provides the specialized education necessary to develop expertise in the ever-broadening field of pharmacy and prepares the student for professional licensure examinations.

All professional courses must be taken in residence. There is no transfer credit for any professional-level course.

All students enrolled in pharmacy courses with an experiential component are required to have satisfactory yearly physical examination reports. A completed health form must be submitted to the office of the Assistant Dean for Experiential Education by the deadline dates established for each academic term. It is the responsibility of students to obtain

a physician and to obtain specific laboratory tests at their own expense. Students must show proof of positive titers for rubella, rubeola, mumps, and varicella; proof of vaccination is not acceptable to practice sites. A positive titer to show immunity against hepatitis B infection may be required at any time, so students are urged to obtain a titer for this as well. Proof of having received appropriate booster doses of diphtheria and tetanus, and proof of polio vaccination are also required. Students need to obtain a test for exposure to tuberculosis – e.g., a PPD or Mantoux tuberculin test – immediately before and then every six months during experiential education. A positive Mantoux test will require additional procedures. In addition, all students are to be tested for syphilis before commencing an experiential course. The College reserves the right to require additional medical tests or documentation it determines are necessary for protecting the health of the student, other health-care providers and patients. Individual sites affiliated with the pharmacy program may require additional medical information from students. It is the student's responsibility to fulfill these requirements in order to participate in experiential courses. Failure to submit required reports within the specific time limit automatically results in a monetary fine and may deny admittance of students to pharmacy courses with experiential components. Students must prove that they are knowledgeable of the Health Insurance Portability and Accountability Act (HIPAA) as it relates to pharmacy. As such, students will complete a College-sponsored HIPAA training program and might need to complete additional training at individual practice sites. Prior to beginning introductory and advanced practice experiences, each student needs to submit proof of being a U.S. citizen or non-citizen national, is a lawfully admitted immigrant for permanent residence, or is a temporary visitor lawfully admitted for educational study. In addition, students may be required to complete OSHA training, have a background check, and be tested for drug use.

In compliance with the U.S. Public Health Service requirements, it is recommended that pregnant students not enroll in Human Anatomy, Physical Assessment and Drug Administration, Pharmacology/ Medicinal Chemistry III, or other courses where students may come into contact with tissue and/or pathogens, or to engage in experiential courses where there are clients with infectious diseases, unless first receiving written permission from their physicians.

Doctor of Pharmacy degree program:

Required Didactic Courses:	94
Pharmacy Clerkships and Professional Electives	40
	<u>134</u>

The following sequence of courses must be completed by all students in the entry-level Doctor of Pharmacy degree program:

3rd Year (P-3)

<i>Semester 1</i>	Cr.
PH 100 Pharmaceutical Care/Health Care	3
PH 101 Social Behavioral Aspects of Pharmaceutical Care/Ethics	3
PH 120 Pharmaceutics I	3
PH 130 Medical Physiology and Pathophysiology	5
PH 131 Biochemical Foundations of Therapeutics	4
	<u>18</u>

<i>Semester 2</i>	Cr.
PH 102 Public Health in Pharmacy Practice	3
PH 111 Pharmacotherapeutics I	4
PH 121 Pharmaceutics II	3
PH 132 Medical Microbiology/Immunology	3
PH 133 Pharmacology/Medicinal Chemistry I	4
	<u>17</u>

4th Year (P-4)

<i>Semester 1</i>	Cr.
PH 200 Communication Skills in Pharmaceutical Care*	2
PH 210 Pharmacotherapeutics II	4
PH 211 Physical Assessment and Drug Administration**	3
PH 220 Pharmaceutics III	4
PH 230 Pharmacology/Medicinal Chemistry II	4
PH 231 Pharmacology/Medicinal Chemistry/Pharmacotherapeutics Recitation	0
PH 310 Introductory Clerkship*	1
	<u>18</u>

<i>Semester 2</i>	Cr.
PH 232 Pharmacology/Medicinal Chemistry III	4
PH 212 Pharmacotherapeutics III	4
PH 221 Pharmaceutics IV	4
PH 201 Pharmacy Law and Ethics	3
Elective*	3
	<u>18</u>

*Some students will be required to complete their elective course in Semester 1 and PH 200 and PH 310 in Semester 2.

**All students are required to document or

receive certification in cardiopulmonary resuscitation prior to beginning experiential courses in their final year. It is highly recommended that students complete this certification while enrolled in PH 211 Physical Assessment and Drug Administration.

5th Year (P-5)

<i>Semester 1</i>	Cr.
PH 400 Practice Management/Pharmacoeconomics	3
PH 410 Pharmacotherapeutics IV	5
PH 420 Pharmaceutics V	3
PH 421 Self Care	3
Elective	3
	<u>17</u>

5th Year (P-5)

<i>Semester 2</i>	Cr.
PH 412 Clinical Pharmacokinetics	3
PH 413 Pharmacotherapeutics V	4
PH 414 Drug Information and Literature Evaluation	4
PH 430 Iatrogenic Diseases	3
Elective	3
	<u>17</u>

6th Year (P-6)

<i>Total of thirty weeks offered throughout the year</i>	Cr.
PH 600 Ambulatory Clerkship I	5
PH 601 Ambulatory Clerkship II	2.5
PH 603 Drug Information	2.5
PH 604 Internal Medicine Clerkship I	5
PH 605 Internal Medicine Clerkship II	5
PH 606 Institutional Practice	5
PH 607 Pharmacy Grand Rounds	0
Elective Clerkship	5
	<u>30</u>

THE LONG ISLAND UNIVERSITY PLAN

In January 1988, the Board of Trustees approved an expansion of educational options linked to supporting services at the University's residential campuses. This integrative approach, known as The Long Island University Plan (LIU Plan), involves close collaboration among many segments of academic and advisement personnel. The primary goal of the LIU Plan is to help students develop a full

sense of their own interests and abilities and to help them identify early the many resources the University provides as they begin to shape their education and their future.

Statement of Mission

The purpose of the LIU Plan is to enhance academic learning by experience-enriched programs that link diverse students to their campus, their community and the world and to draw from their cultural diversity to enrich campus life. It seeks to empower students to take charge of their education and lives through the Freshman Program, comprehensive Academic Advisement, Office of Career Services (Cooperative Education, Career Development and internships) and an innovative, integrative curriculum in the University Honors Program. Through workplace experiences, workshops, development of technological skills, consultation services, integrative seminars, and tools for self-assessment and exploration, the LIU Plan enables students to develop skills and talents that can lead to coherent, well-informed and successful lives.

Counseling: the Keystone

The LIU Plan is tied together by a multifaceted approach to counseling that encompasses academic, career and financial advisement from the time students register to the time they graduate. Support services and information workshops are open to all students, including transfers. Upper-level students consult the Academic Advisement Center before entering professional programs and are eligible for some workplace experiences through the Office of Career Services. Incoming freshmen enjoy a full year of advisement from the Academic Advisement Center, as well as early access to guidance and placement from the Cooperative Education Program. All students receive integrated counseling to help them identify their own values, goals, interests and abilities. Trained staff and student mentors facilitate student success in exploring their own best possibilities.

The Experience Factor

Having as its premise that through professional-level experience students learn much about themselves and their career options, the LIU Plan provides a wide variety of placements that allow students to gain that experience while in college. These include curriculum-related paid work, internships, study abroad, community services, honors programs, and special programs such as the New York City Honors Semester, cosponsored by The National Collegiate Honors Council and open to honors students from throughout the country.

Also with the belief that undergraduate education is both enhanced and broadened by exposure to different settings, opportunities for internships and placements are designed to provide students with both challenge and variety. Consultation between campus departments and the Cooperative Education program ensures students' professional development and permits close linkages between the work experience and students' academic growth. Workplace experience also provides professional-level income to help with the costs of college; the opportunity to make valuable contacts with major corporations, government, business and professional firms, and educational and cultural institutions; the credentials attractive both to prospective employers and graduate programs; and the chance to test a career field or investigate advanced study.

Courses and workshops clustered around direct experience range from immersion-learning introduced on Orientation Day to extended systematic explorations throughout the Freshman Year Program, the nucleus of which is the Campus Orientation Seminar—The University: Discovery and Change. In collaboration with Academic Advisement, Cooperative Education, and University Honors, the Orientation Seminar is an agency through which students are guided to personal accomplishment, peer and professional mentoring, and preparation for the world of work.

The experience with the Orientation Seminar is extended throughout undergraduate studies to include leadership roles, whether through engagement in campus activities and clubs or through academic excellence and recognition by honors societies housed in departments and in the offices dealing with the freshman experience. Academic achievement in the freshman year is recognized by induction into Alpha Lambda Delta, the

national freshman honors society of which the Brooklyn Campus chapter, Alpha Delta, is the only chapter in New York City.

Essential Literacies and Academic Excellence

The best employers and graduate and professional schools look for qualities of mind and imagination that distinguish independent thinkers and leaders. The University encourages its students to take a long-range view of their own potential and to acquire the knowledge and skills needed to ensure a lifetime of personal growth and progress. Through its core curriculum, unified advisement through the LIU Plan, skills training, and emphasis on critical thinking about complex issues and on clear, informed communication, the University further seeks to prepare its students for the demands of conflicting arenas in a fast-moving and changing society.

For an Interview or Further Information

If you are a current student, a transfer student or a high school student evaluating college and wish to know more about how you may take advantage of the LIU Plan, please contact the Brooklyn Campus Office of Admissions at (718) 488-1011.

PROFESSIONAL COURSE DESCRIPTIONS

Course schedules are printed every semester. The listings below are tentative. They are based on past history and are subject to change.

Course offerings in the College of Pharmacy are provided by its three academic divisions. These divisions are described below.

Division of Pharmaceutical Sciences

Objectives: The Division provides the fundamental scientific basis upon which the practice of pharmacy depends. The knowledge imparted to the student covers a broad range of topics. Course offerings first familiarize the student with the body and the interrelationships of its functions. Additional courses that build upon this foundation are concerned with health and disease states; physical and chemical aspects of compounds; medicinal chemistry; mechanisms, uses and interactions of drugs; pharmaceutical calculations; drug delivery systems; in vitro and in vivo processes affecting drug therapy; pharmaceutical analysis; biopharmaceutics and pharmacokinetics; adverse drug reactions; and individualization of drug therapy. The responsibility of this division is to provide the student with a thorough knowledge of pharmaceuticals, both prescription and nonprescription, from the time they are developed to the time they are dispensed. By acquiring the fundamental background in pharmaceutical sciences, the student will be prepared to effectively deliver pharmaceutical care to patients.

The Division of Pharmaceutical Sciences is responsible for the following course offerings: PH series required courses in the 100 to 400 level with a second digit of 2 or 3, PH series elective courses in the 100 to 400 series with a second digit of 6 or 7.

Division of Social and Administrative Sciences

Objectives: This Division provides students with an understanding of the administrative, legal, ethical, social, behavioral, statistical and research methodology aspects of pharmaceutical care. Courses are designed to support competencies requiring students to understand and apply concepts, principles and theories of human systems to maximize patient health outcomes.

The Division of Social and Administrative Sciences is responsible for the following course offerings: PH 1, PH series required courses in the 100 to 400 level with a second digit of 0, PH series elective courses in the 100 to 400 series with a second digit of 4.

Division of Pharmacy Practice

Objectives: The objectives of this Division include the development of skills for the practice of patient-oriented pharmacy and the selection of the appropriate therapeutic regimen for a specific disease in an individual patient. The Division has the responsibility to train students to counsel patients and other health-care professionals in the rational use of prescription and nonprescription drugs, and to safeguard against drug interactions, drug misuse and drug abuse.

The Division of Pharmacy Practice is responsible for the following course offerings: All PH series courses in the 600 level, PH series required courses in the 100 to 400 level with a second digit of 1, PH series elective courses in the 100 to 400 series with a second digit of 5.

Course Offerings

PH 1 Pharmacy Orientation Seminar

This course is designed as an introduction for the preprofessional student to the possibilities and processes of professional life in pharmacy. Utilizing a social/historical approach, the seminar provides a survey of the development of pharmacy practice since the emergence of scientific medicine through the current pharmaceutical-care movement. Pharmacy's position in the socioeconomic and cultural framework of health-care delivery is defined through an exploration of the major societal, political, philosophical, economic and ethical issues affecting the profession. The various roles and career pathways of pharmacists within this framework are examined. The seminar also provides a support system for the preprofessional student and a source of information about the requirements, responsibilities and attitudes necessary for success in the professional phase of the program. After completing this course, the student will be able to cogently discuss the basic philosophy and goals of pharmaceutical care and to formulate soundly based positions on major issues affecting the profession of pharmacy. Additionally, the student will be able to initiate informed and rational decisions about potential career goals. One lecture hour.

Fall, Spring, 1 credit

PH 100 Pharmaceutical Care/Health Care

Students will learn how various health-care professionals interact to provide care in hospitals, long-term care facilities, ambulatory and managed-care institutions. Students will learn the role of government as payer and provider of health care, the effect of managed-care systems on quality and access to health care, and the mechanisms by which health policy is formulated, and apply this knowledge to explain the roles of pharmacists in providing pharmaceutical care to patients. The course will contain an experiential portion in which students will visit pharmacy sites where pharmaceutical care is being practiced. After completing this course, the student will have developed a foundation for applying knowledge in the pharmaceutical and clinical sciences to the provision of patient-focused care. Three lecture hours and periodic site visits.

Fall, 3 credits

PH 101 Social Behavioral Aspects of Pharmaceutical Care/Ethics

This course surveys the behavioral and social aspects of pharmaceutical care such as the health-belief model, psychosocial aspects of illness, including illness behavior, psychosociological aspects of the use of pharmaceuticals, compliance behavior, and the cultural constructs of professionalism and the professionalization of pharmacists.

Additionally, this course examines value judgments in the provision of pharmaceutical care. Utilitarian, rights-based, and other major ethical approaches are considered in relation to such topics as patients' rights, truth-telling, informed consent, and the right to health care. After completing this course students should be able to demonstrate sensitivity to and facility with personal and societal values, beliefs and ethical principles in the interpersonal and decision-making processes associated with the provision of pharmaceutical care to culturally diverse populations. Two lecture hours and one recitation hour.

Prerequisites: PH 100

Spring, 3 credits

PH 102 Public Health in Pharmacy Practice

The role of the pharmacist in Public Health is to be able to assess the health needs of populations and to promote health improvement, wellness and disease prevention in cooperation with patients, communities, at-risk populations and other members of an interpro-



fessional team of health care providers. At the completion of this course, students should be able to design and evaluate initiatives to promote public health such as: (1) improve access to health care and reduce health disparities, (2) increase the quality of community-based programs, (3) use communication strategies to improve health, (4) ensure the safe and effective use of medical products, (5) promote health and reduce chronic diseases associated with diet and weight, (6) improve health, fitness and quality of life through promoting daily physical activity, (7) reduce substance abuse, and (8) reduce illness, disability and death related to tobacco use and exposure to secondhand smoke. Three lecture hours.

Prerequisite: PH101

Spring, 3 credits

PH 111 Pharmacotherapeutics I

This is the first course in the pharmacotherapeutics series. It is designed to introduce the entry-level student to the therapeutic aspects of pharmaceutical care. Students will also be introduced to standard and specialized biomedical resources including computerized databases, textbooks, indexing systems, the Internet, and primary literature. After completing this course, the student will



be able to do the following: use a medical record to find pertinent information needed to develop a pharmaceutical care plan, describe the most important laboratory tests needed to monitor a patient with a given disease state or to monitor a patient receiving a given medication, differentiate among the various routes of drug administration, and delineate the principles of drug interactions and adverse drug reactions. In addition, the student will demonstrate proficiency in conducting an information search and in critical-thinking skills via the evaluation of case-study scenarios during recitation periods. Four lecture hours and one recitation hour.

Prerequisites: PH 130
Spring, 4 credits

PH 120 Pharmaceutics I

This course is designed to enable students to perform calculations requisite to the practice of pharmacy. The student will learn to interpret prescription orders, and perform all calculations necessary for the compounding of prescriptions. The course is taught using a series of problem sets and includes, but is not limited to, the following: pharmaceutical units and conversions; calculation of errors; calculation of doses; using concentration terms for diluting (or concentrating) stock solutions; manufacturing isotonic solutions; calculations involving parenteral solutions and rudiments of statistics and data interpretation. Three lecture hours.

Prerequisite: Third-year standing
Fall, 3 credits

PH 121 Pharmaceutics II PH 220 Pharmaceutics III PH 221 Pharmaceutics IV

In this sequence of courses students will use basic and applied scientific principles to design, optimize and prepare pharmaceutical dosage forms. In Pharmaceutics II, topics include the discussion of states of matter, thermodynamics, kinetics, solution theory, diffusion and dissolution principles, and rheology. The application of these subject areas to the preparation of liquid dosage forms will also be discussed. In Pharmaceutics III the principles of biopharmaceutics and bioavailability, interfacial phenomena, and coarse dispersions will be discussed and applied to the design of polyphasic dispersions (suspensions, emulsions, magmas and gels), sterile preparations (parenterals, ophthalmics), and nasal and optic products. In Pharmaceutics IV the science, art and technology of dermal and transdermal products, powders and

granules, capsules, tablets, suppositories and aerosols will be discussed.

Additionally, rate-controlled and targeted drug-delivery systems and biotechnology drug products will be discussed in Pharmaceutics IV. Laboratories in Pharmaceutics III and IV will stress all aspects of interpreting and dispensing prescriptions and medication orders pertaining to the dosage forms discussed in the courses. Students will perform necessary calculations, extemporaneously prepare products for pharmaceutical use, and simulate counseling patients and other health-care professionals.

Pharmaceutics II—Three lecture hours
Prerequisite: PH 120

Spring, Summer; 3 credits

Pharmaceutics III—Three lecture hours and three laboratory hours
Special Fee: \$95.00

Prerequisite: PH 121

Fall, Summer; 4 credits

Pharmaceutics IV—Three lecture hours and three laboratory hours

Special Fee: \$95.00

Prerequisite: PH 220

Spring, Summer; 4 credits

PH 130 Medical Physiology and Pathophysiology

This course is designed to discuss the relationship of normal body functioning to the physiologic changes that participate in disease production, as well as the body's remarkable ability to compensate for these changes. A complete study of human physiology that integrates all aspects of the individual cells and organs of the human body into a functional whole will be presented. This information will provide the basis that can be used to explain the pathophysiological aspects of altered health. The content of this course will focus on the health-illness continuum: (1) control of normal body function; (2) pathophysiology, or alterations in body function; and (3) system or organ failure, regardless of pathologic state (e.g., heart failure and renal failure). The didactic material will emphasize the basics of organ system pathophysiology, "bridging" these concepts to pharmaceutical care through clinical case studies that strengthen the student's grasp of the scientific basis of disease. This course will lay the foundation for further advanced study in the basic health, clinical and pharmaceutical sciences. After completing this course, the student will be able to describe the various physiological mechanisms of disease processes which are vital for the drug use decision-making process. The student will acquire the scientific knowl-

edge essential for the application of pharmaceutical care. Five lecture hours and one recitation hour.

Prerequisites: Chemistry 122, Biology 4 and 131
Fall, 5 credits

PH 131 Biochemical Foundations of Therapeutics

This course is designed to provide the molecular and biochemical foundations necessary for understanding the basis of pharmacotherapeutics. The course involves the study of biomolecular interactions, macromolecular structure and functions, cellular catabolic and anabolic pathways, DNA metabolism, gene expression and biochemical bases of diseases. After completing this course, students will be able to apply biochemical principles that are requisite to the understanding of higher-level courses in medical microbiology, immunology, pharmacology and medicinal chemistry. Four lecture hours.

Prerequisites: Chemistry 122, Biology 4 and 131
Fall, 4 credits

PH 132 Medical Microbiology/Immunology

This course provides an in-depth study of the microbial world with emphasis on the nature and behavior of microorganisms, the interrelationships that operate between microbes and the human host in health and disease, and the principles of prevention and control of infectious disease. Pathological and immunological changes induced by bacteria, viruses, fungi, parasites, helminths, chlamydiae, rickettsiae, mycoplasma, L-forms, and prions and the way these organisms are affected by antimicrobials will be discussed. Basic and advanced mechanisms involved in infection and immunity encompassing natural and induced modes of host defense will be emphasized.

Topics in immunology will also include vaccination strategies, immune-related diseases and transplantation immunology. Biotechnology and the use of microorganisms in the production of biopharmaceuticals will be discussed. After completing this course students will be able to identify microorganisms and characterize the infectious disease process. Three lecture hours.

Prerequisites: PH 130, PH 131
Spring, 3 credits

PH 133 Pharmacology/Medicinal Chemistry I**PH 230 Pharmacology/Medicinal Chemistry II****PH 231 Pharmacology/Medicinal Chemistry II/Pharmacotherapeutics II Recitation****PH 232 Pharmacology/Medicinal Chemistry III**

The pharmacology/medicinal chemistry series of courses is an integrated approach to the understanding of the molecular mechanisms of drug action and their effects on the human body. Students will obtain expertise in the principles of drug action including receptor theory and membrane permeation, and will be introduced to basic pharmacokinetic principles. Following completion of the sequence, students will be able to explain and predict the chemical basis of drug metabolism and structure activity relationships.

These courses will cover pharmacological agents, utilizing an integrated approach relating chemical structure to therapeutic and adverse effects. Students will be expected to understand the pharmacological activities of agents affecting the autonomic nervous system (cholinergic and adrenergic pharmacology), central nervous system (anesthetics, antipsychotics, antiepileptics, etc.), the cardiovascular system and hormonal systems. In addition, students will master the pharmacological and medicinal chemical properties of anti-cancer, anti-microbial and anti-viral agents.

Recitations will provide students with an opportunity to meet in small groups to evaluate case studies and work problems. Students will develop problem-solving and critical thinking skills during the recitation sessions. The recitation session in the second course of the sequence will be integrated with Pharmacotherapeutics II (PH 210). The third course in the sequence includes a two-hour laboratory. The laboratory will provide students with an opportunity to develop laboratory skills. Techniques discussed during the course sequence will be the basis for laboratory exercises. For example, students will conduct enzymatic assays and study antimicrobial resistance.

Pharmacology/Medicinal Chemistry I—Four lecture hours and one recitation hour

Prerequisites: PH 130, PH 131
Spring, 4 credits

Pharmacology/Medicinal Chemistry II—Four lecture hours

Prerequisites: PH 132, PH 133
Co-requisite: PH 231
Fall, 4 credits

Pharmacology/Medicinal Chemistry II/Pharmacotherapeutics II Recitation

One recitation hour

Prerequisites: PH 132, PH 133

Co-requisite: PH 230

Fall, 0 credits

May be repeated.

Pharmacology/Medicinal Chemistry III

Three lecture hours, two laboratory hours, and/or recitation hours

Special fee: \$95.00

Prerequisites: PH 132, PH 133

Spring, 4 credits

PH 200 Communication Skills in Pharmaceutical Care

Students will learn to apply basic communication skills, such as empathic listening, conflict management and assertiveness to affect, in a positive manner, their interprofessional relationships, the clinical, economic and humanistic outcomes of patients, the productivity of technical personnel, and their success as pharmacists. The course is divided into one hour of lecture and one hour of recitation per week. The recitation component will consist of role playing, presentation, and writing exercises that will account for a significant portion of the course grade. After completing the course, the student will be able to apply knowledge from the pharmaceutical and clinical sciences in order to counsel patients regarding the use of their medications.

One lecture hour and one recitation hour.

Prerequisite: PH 101

Fall, Spring, 2 credits

PH 201 Pharmacy Law and Ethics

This course introduces the student to the legal environment of pharmacy—specifically, national and New York State statutes, regulations and legal decisions. In addition, the course includes legal issues with ethical implications. After completing the course students will possess the knowledge, skills and integrity to practice pharmacy within accepted legal and professional standards of conduct, with a sense of service and responsibility to the community. Three lecture hours.

Prerequisite: PH 101

Spring, 3 credits

PH 210 Pharmacotherapeutics II**PH 212 Pharmacotherapeutics III****PH 410 Pharmacotherapeutics IV****PH 413 Pharmacotherapeutics V**

These four courses, the second, third, fourth and fifth courses in the pharmacotherapeutics series, stress the understanding of important disease states and rational therapeutics of these conditions.

The disease states are presented with emphasis on developing critical thinking and problem-solving skills. After completing these courses, students will be able to utilize pathophysiologic, pharmacotherapeutic and pharmacoeconomic principles to formulate pharmaceutical care plans for patient management. Development of pharmaceutical care plans includes problem identification, data collection and evaluation, implementation of appropriate therapy, and monitoring patient outcomes. Case studies and problem-based learning will be incorporated throughout the courses. Pharmacotherapeutics II—Four lecture hours

Prerequisites: PH 111, PH 131

Co-requisite: PH 231

Fall, 4 credits

Pharmacotherapeutics III—Four lecture hours and one recitation hour

Prerequisite: PH 210, PH 211, PH 230

Spring, 4 credits

Pharmacotherapeutics IV—Four lecture hours and one recitation hour

Prerequisite: PH 212, PH 232

Fall, 5 credits

Pharmacotherapeutics V—Four lecture hours and one recitation hour

Prerequisite: PH 210, PH 212, PH 410, PH 421

Spring, 4 credits

PH 211 Physical Assessment and Drug Administration

After completing the components of this course, students will be able to obtain medical histories; screen patients for common medical problems such as hypertension, diabetes and a variety of cancers; measure and evaluate vital signs; detect adverse drug reactions and monitor patients' therapies through a review of systems and physical examination. Students will also learn drug administration techniques and will become competent in administering intramuscular and subcutaneous injections in addition to eye and ear preparations, and medications via the use of inhalers and nebulizers. Various administration devices will also be reviewed and demonstrated. Students will be encouraged to complete their mandatory cardiopulmonary resuscitation module during this course. Three hours of lectures and interactive experiences.

Special fee: \$115.00

Prerequisites: PH 100, PH 111

Fall, 3 credits

PH 240 Introduction to Complementary and Alternative Medicine

The course is an overview of micro and

macro perspectives of alternative medicine. Students will search and evaluate information on alternative medicines and make cost/benefit decisions about the use of a particular alternative medicine for a patient, supporting their decision with evidence and evaluating the validity of the evidence. They will also evaluate the use of alternative medicines in a societal context from perspectives of the health professions, biological and behavioral sciences, business and industry, practitioners and users. Lonie
Prerequisites: Third year courses
On Occasion; 3 credits

PH 241 Pharmaceutical Marketing and Advertising Procedures

The course will give students insight into the strategies and tactics employed in marketing pharmaceuticals to physicians, other health-care professionals, and consumers.
On Occasion, 3 credits

PH 250 Issues in Women's Health I

The course is designed to develop the pharmacy student's competency in a number of key issues in healthcare for women, including conditions or diseases unique to women, more prevalent or more serious in women, or for which the risk factors or interventions are different for women. Differences due to healthcare considerations, including the availability, affordability and appropriateness of health-care services for women will also be covered.

The recitation sessions will provide the students with an opportunity for developing problem-solving and critical-thinking skills via the evaluation of case studies. Cicero

Two lecture hours and one recitation hour
On Occasion; 3 credits

PH 270 Pharmaceutical Biotechnology

This course is designed to introduce students to the use of biotechnology and biotechnology-related techniques in the development of pharmacotherapeutic agents. It is aimed at students who are interested in an in-depth study of biotechnology-related products. Students will obtain expertise in the basic concepts of molecular biotechnology, the biochemical analysis of recombinant molecules, peptide chemistry and peptidomimetics (peptide drugs), antisense therapy, monoclonal antibody-based pharmaceuticals and the synthesis of cytokines (interferons, interleukins, etc.) and growth factors by recombinant techniques. After completing this course, students will be able

to explain the procedures involved in the development of biotechnology-related pharmaceuticals and be familiar with the spectrum of pharmacotherapeutic agents that are produced using biotechnology and biotechnology-related techniques.

The course will involve the use of problem-based learning, video presentations and experimental demonstrations to reinforce key concepts about the preparation and applications of biotechnology-derived products in the treatment of serious diseases. Joseph

On Occasion, 3 credits

PH 271 Advanced Medical Microbiology

A combination of laboratory principles along with some of the modern methodologies will be emphasized in this curriculum. The primary goal will be to expose students to these avenues from a practical angle with a clinical blend. Laboratory skills and practices (such as laboratory safety, aseptic technique, environmental growth conditions, microscopy, differential staining, media preparation and characteristics, classification of microorganisms, filtration and sterilization, operation and maintenance of basic laboratory equipment, sample collection and processing, biochemical and morphological identification of microbes etc.) mastered in this elective when integrated with knowledge obtained through Medical Microbiology and Immunology will significantly enhance the understanding of diagnosis, prevention and treatment of infectious diseases. Experience gained in this course will help immensely during subsequent years of the program (clerkship/hospital rotation) and during professional pharmacy practice. Ray

Special fee: \$95.00

On Occasion, 3 credits

PH 272 Advanced Topics in

Cardiovascular Pathophysiology
The course provides students with the opportunity for in-depth study of cardiovascular disorders and their treatment. It focuses on the molecular mechanisms, symptoms, complications and consequences of hypertension, heart failure, ischemic heart disease, valvular and congenital heart disorders, and arrhythmia. Students will have the opportunity to research and present information on a cardiovascular disease, and will utilize case studies and research articles to gain in-depth knowledge of the various cardiovascular disorders.

Prerequisites: Third year courses

On Occasion, 3 credits

PH 273 Advanced Molecular Immunology and Immunopathology

This course is designed to provide a thorough understanding of the following: 1. humoral and cellular immune processes that guard against pathogens and other exogenous agents, 2. the molecular basis of the production of a repertoire of antibodies and T-cell receptors against all possible antigens by the B- and T-cells respectively by rearrangement of the respective genes, 3. hierarchy in the expression of the immunoglobulin genes, immunoglobulin isotype succession, membrane-bound and secretory antibodies, 4. major histocompatibility determinants etc., 5. immune-mediated disorders including autoimmune disorders stemming from the four types of hyperimmune processes, transplantation immunology, 6. cancer of the immune system, acquired and inborn immunodeficiency disorders, 7. immunization strategies, 8. immunology based approach to therapeutics, 9. immunotechniques used for clinical and diagnostic purposes, and 10. recent trends in the pharmacological application of genomics. Three lecture hours. Ratna

Prerequisites: 4th Year Standing, PH 130, PH 131, PH 132

On Occasion, 3 credits

PH 310 Introductory Clerkship

This experiential course will expose the pharmacy student to the practice of pharmaceutical care. The student will see first hand what it means to practice in a variety of patient-oriented settings such as an independent community pharmacy, a chain pharmacy, other types of ambulatory practice, a hospital/medical center, a long-term care facility and managed-care organizations. In order to receive a realistic experience, whenever feasible the student will be teamed with a senior pharmacy student assigned to the practice site. After completing this course the student will be able to describe a variety of settings in which pharmaceutical care is practiced as well as the role of the pharmacist in each of these settings, and will be able to develop pharmaceutical care plans for patients. Also, the student will be in a better position to begin to formulate career-path options. Pass-Fail only
Prerequisites: PH 101, PH 111, PH 121, PH 133

Fall, Spring, 1 credit

PH 400 Practice Management Pharmacoeconomics

The course introduces students to a variety of management concepts and prac-

tices in order to prepare them for the practice of pharmacy. This course includes a survey of criteria that facilitate the effective management of community, institutional and managed-care pharmacy. Students will apply principles of accounting, advertising, human resources management, marketing, pharmacoeconomics, and quality assurance simultaneously to optimize patient care, professional esteem and profit. The course will be devoted to issues centered around the development of innovative practices across various settings. Issues include the use of software and automation technology, disease management, education/consultation, documentation, drug-utilization evaluation, decision analysis, and maintaining financial and patient health data.

Prerequisites: PH 201, PH 210
Fall, 3 credits

PH 412 Clinical Pharmacokinetics

This course focuses on the utilization and application of pharmacokinetic principles in developing a pharmaceutical-care plan for a given patient. After completing this course, students will be able to dose and monitor drug therapy for those particular drugs with narrow therapeutic indices utilizing their knowledge regarding the influence of age, disease and drug interactions on drug disposition. Three lecture hours.

Prerequisites: PH 410, PH 420
Spring, 3 credits

PH 414 Drug Information and Literature Evaluation

This course is designed to introduce the student to the concepts involved in responding to drug information requests including analysis of the question, the systematic search of the literature, and ways to formulate and communicate a response. In addition, the student will learn how to evaluate biomedical literature with respect to the trial design, methodology, implementation, statistical analysis of results, and justification for the conclusion. Students will learn to interpret conflicting or contradictory findings in the literature. Overall, the student will be able to judge the merit of a published trial and determine to what extent the results can be extrapolated to a typical clinical practice setting. Four lecture hours

Prerequisites: 5th year standing
Spring, 4 credits

PH 420 Pharmaceutics V

This course focuses on the study of factors that influence the in vivo disposi-

tion of drugs, e.g., absorption, distribution, metabolism and excretion. The application of the principles of biopharmaceutics and pharmacokinetics to dosing and bioavailability is discussed. Mathematical models are generated to distinguish between various methods of drug input and output. There is also a brief examination of the analytical methods used to measure drug concentrations in various body fluids. Finally, the relationship between pharmacokinetics and pharmacodynamics is explored, using a number of drug examples. Three lecture hours.

Prerequisite: PH 221
Fall, 3 credits

PH 421 Self Care

This course is designed to introduce the student to commonly used nonprescription products, vitamins, health foods and other nutritional supplements, home diagnostic kits, alternative medicine options and prescription accessories. It emphasizes the need for pharmacists to be proactive and interactive with patients in recommending and in using nonprescription products and to ensure their correct and safe usage. After completing this course, students will be able to perform the following tasks: assist patients in selecting the appropriate dosage form for self care and advising patients on correct use of selected nonprescription drugs; counsel patients concerning self care; monitor patients for unwanted drug effects and possible drug interaction; monitor patients' progress with regard to therapeutic objectives to maximize compliance and improve outcomes of therapy; counsel patients regarding the use of home diagnostic devices, health foods and vitamins, contraception and family planning; advise patients on the appropriateness of alternative medicine, diets, food and exercise. Students will have the opportunity to develop critical thinking skills through evaluation of case studies. Three lecture hours.

Prerequisites: PH 200, PH 212, PH 221, PH 232
Fall, 3 credits

PH 430 Iatrogenic Diseases

This course is designed to discuss unfavorable or deleterious effects of a therapeutic or diagnostic regimen. The main focus of the course is to discuss drug-induced adverse reactions and their mechanisms at biochemical, cellular and molecular levels on various systems and functions of the patients undergoing treatment. In addition, the course will

include discussion of unwanted responses that follow multiple drug therapy (drug interactions), any diagnostic procedure and/or use of any diagnostic agent. After completing this course, the student will be able to utilize this knowledge in counseling patients about expected adverse effects of their medications and/or diagnostic regimen. The didactic material will be supplemented by case reports from the literature. The reading assignments will include, but not be limited to, researching of overdose treatment protocols and other iatrogenic scenarios from the medical literature. Three lecture hours.

Prerequisites: PH 232, PH 410
Spring, 3 credits

PH 440 Health Promotion: Planning and Evaluating Pharmaceutical Care Programs

The development, implementation and evaluation of a successful pharmaceutical care program depend on the critical application of several educational and behavioral principles and theories. To properly assess the value of pharmaceutical care programs, pharmacists need to be aware of appropriate methodological designs for developing and evaluating their pharmaceutical care programs. Programs that are better designed can yield more meaningful data as to which pharmaceutical care programs will most likely have the greatest impact on patient care. This course will help pharmacy students understand the basic steps and principles necessary to design, implement and evaluate a pharmaceutical care program. The course will also prepare students in writing a brief project proposal, develop brief methods to assess selected outcomes of a program, develop promotional items to market a pharmaceutical care program, and prepare a presentation about a program they have developed.

Three lecture hours.
Prerequisites: Fifth Year Standing, PH 210, PH 212
On Occasion, 3 credits

PH 450 Patient Education

This course is designed to help pharmacists who are not skilled in patient education but need to know how to design, implement and evaluate planned programs of educational activities to help improve patients' health behaviors and/or health status. This is a course on behavior, not drug information. Three lecture hours.

On Occasion, 3 credits

PH 451 Pharmaceuticals in Nature

With the growing popularity of “natural” drugs new challenges are facing pharmacists in providing pharmaceutical care. It is the responsibility of practicing pharmacists to have an understanding of all the pharmaceutically active products their patients are using. This course will combine didactic classroom study with weekly field trips to search for and identify pharmaceuticals in their indigenous environment. Scientific research with specific product information on thirty of the most popular clinically relevant herbal products (focusing on those found in the local environment) will be presented. The side effect profile for each herbal medicine will be clearly delineated and potential interactions and contraindications will be addressed. To enhance the formulation of pharmaceutical care plans for patient management these products will be critically compared to more conventional medications used for similar indications. Concepts in the arena of alternative medicine such as naturopathic medicine and homeopathy will be discussed. Field trips will account for approximately one-half of the time allotment of this course. Proximate to the New York metropolitan area, Gateway National Recreation Area offers the perfect field laboratory to study naturally occurring useful plants indigenous to this vast complex natural resource. Factors responsible for the accelerating decline and depletion of these vital coastal areas will be considered. Recognizing the need for protection and conservation of this delicate ecosystem will lead to a discussion of political issues relative to this habitat at risk. In addition, a rudimentary understanding of the natural wildlife that impacts on the environment that sustains these natural products will lead to discussion of the shore birds that are a part of the delicate ecosystem that is under study. J. S. Rosenberg
Three lecture hours and weekly field trips

Prerequisite: Fifth year standing
On Occasion; 3 credits

PH 460 Drug Metabolism and Disposition

This course will discuss and detail the major pathways that contribute to drug metabolism and disposition: biotransformation enzyme processes and membrane transport systems. The first part of the course will focus on the various enzyme systems that are responsible for biotransformation (e.g., cytochrome P-450 and glucuronyl transferase). Topics to be dis-

cussed include classification of these systems and their distribution in the body, phenotype/genotype issues, and clinical implications. The second part of the course will cover the numerous membrane transport systems that have been identified in four organ systems that are of primary importance for drug disposition and activity: gastrointestinal, hepatobiliary, renal, and central nervous systems. A focus of this material will be the strategies used to modulate these transport systems to improve bioavailability, distribution and, consequently, efficacy. Taft

Three lecture hours
On Occasion, 3 credits

PH 461 Critical Thinking and Problem-Solving in Pharmacy

This course will discuss and detail the nature of analytical problems, the thought processes behind problem-solving, and how to find and use solutions. While some mathematical examples will be included, the emphasis in this course will be on problems of a non-mathematical nature and applications of interest to pharmacists. Included will be a classification and comparison of the major types of problems (those with absolute unique solutions, those with best solutions, those with many acceptable solutions and many criteria for best solutions, “moving target” solutions, one-step, multi-step sequential, multi-step parallel). General methods of solution will be detailed, along with specific examples and case studies. Projects will include applying this information to classify problems, determine methods of solution, and produce and evaluate solutions. Problems and applications will also be classified as “production” vs. “solution.” Specific case studies will include dispensing process (“production”) and cascading iatrogenesis (“solution”), and students will determine how to “engineer” a solution process and determine where it has broken down when errors occur. At the end of the course, students should have an understanding of how to approach problems of all types, how to rationally determine some method of solution, how to evaluate solution methods and find answers to their own problems and those of others. In addition, they should understand how to determine why and where errors occur, how to establish logical criteria for making decisions based on judgment or hard facts, and how to critique research studies. Bellantone
Three lecture hours
On Occasion, 3 credits

PH 462 Applied Pharmacokinetics

This course consists of lecture and computer classroom instruction. The course has a practical goal and students will work with data sets from recent literature to perform the required statistical and pharmacokinetic analysis. The course will provide students with hands-on practice with professional pharmacokinetic software packages. The course consists of an introductory overview of biostatistical topics such as elementary probability theory, hypothesis testing, analysis of variance, regression and correlation, and non-parametric methods. All these concepts will be explained with examples pertinent to pharmacokinetic analysis. Then the students will be exposed to the principles of clinical study design including bioavailability and bioequivalence studies according to FDA guidelines. Primary clinical literature will be analyzed and used as a source of data for in-class analysis. The basic compartmental and non-compartmental pharmacokinetic models will be reviewed. The students will learn how to use nonlinear regression programs (winnonlin and/or ADAPT II) to perform nonlinear regression analysis on pharmacokinetic data. A detailed discussion of the computer output will permit the selection of the most appropriate model and parameters describing the data based on sound statistical principles. Stagni

Three lecture hours
On Occasion, 3 credits

PH 463 Sterile Products

This course will explain in detail the various procedures necessary to prepare, dispense and label sterile products, to validate methods of sterilization and aseptic processes, and to assure the quality and control of environmental conditions for aseptic operations. Aseptic techniques, incompatibilities, finished product release testing, storage and expiration dating will also be presented. Students will gain practical experience in laboratories in compounding, dispensing, reading and interpreting prescriptions. Three lecture hours per week plus occasional laboratory assignments. Sidhom
Special Fee: \$95.00

On Occasion, 3 credits

PH 464 Prescription Accessories

This course will discuss the importance of the prescription accessory department as a part of the ambulatory pharmacist's practice. Prescription accessories will be categorized with respect to the pharmacist's participation as a member of the health-care team. Topics to be covered include:

thermometers, home pregnancy tests, pregnancy preventatives, enemas, feminine syringes, pessaries, rectal and vaginal dilators, nasal aspirators, diabetic monitors and accessories, male impotency pumps, SIDS monitors, enuretic devices, vaporizers, humidifiers, nebulizers, atomizers, wound care, tissue trauma, bandages and surgical dressings, ostomy supplies and devices, durable medical equipment, and types of orthotics and fitting procedures for such accessories. Issues related to third-party reimbursement policies for prescription accessories will also be discussed. Staff
Three lecture hours
Special Fee: \$95.00
On Occasion, 3 credits

PH 465 Contemporary Compounding

This course is designed to educate pharmacy students in the compounding of extemporaneous dosage forms such as capsules, suppositories, suspensions, ophthalmic solutions, lip balms, ointments, etc. It also introduces the students to the concepts of home infusion therapy and gives them an opportunity to practice the preparation of total parenteral admixtures. The objective of the course is to provide pharmacy students with a hands-on opportunity to practice their chosen profession. As compounding pharmacy continues to grow, it will provide more pharmacists with the opportunity to use their innovative skills to solve patient problems. In this course, students will be trained to assess and be aware of the requirements for and the uniqueness of formulating a specific drug product for a specific patient. This service constitutes an important component in providing pharmaceutical care. Reference materials used in this course will familiarize the student with the facilities, equipment and supplies necessary for extemporaneous compounding; records and record-keeping; stability of compounded products, pharmaceutical compounding calculations, quality control, etc. Laboratory hours will ensure that students properly interpret prescriptions, employ actives and excipients that are appropriate for any given dosage form. It will also make students cognizant of the quality of drugs, excipients, and other additives in terms of their stability, compatibility and, when necessary, sterility. Students will be exposed to compounding techniques commensurate with 21st century compounding. Cutie, F. Plakogiannis
Three lecture hours and occasional laboratories
Special Fee: \$95.00
On Occasion, 3 credits

PH 466 Theory and Design of

Controlled Release Dosage Forms
This course will cover the theoretical aspects of currently utilized dosage forms designed for controlling the release of drugs to the human body. A wide variety of drug delivery system designs will be analyzed in this course. Students taking this course will study the mechanisms and kinetics of drug release from these systems, structure and properties of fabrication materials, principles of molecular diffusion across polymer barriers and transport across biological interfaces. Jochsberger
Three lecture hours
On Occasion, 3 credits

PH 467 Industrial Pharmacy

This course is designed to introduce the professional program pharmacy student to processes such as formulation, scaleup, production, and stability-testing utilized in the manufacturing of pharmaceutical dosage forms. The methodologies and technologies used in these processes to produce various dosage forms such as tablets, ointments, creams, capsules, suspensions and sterile products will be presented. The different techniques used to formulate dosage forms possessing unique properties such as sustained or delayed release dosage forms will also be examined. Patel
Three lecture hours and occasional laboratories
Special Fee: \$95.00
On Occasion, 3 credits

PH 470 Biochemical Cofactors and Nutritional Supplements

This course is designed to introduce students to the basic biochemistry of vitamins, cofactors, and other nutritional supplements. It is aimed at students who are interested in gaining an in-depth knowledge of these agents. Students will obtain expertise in the mechanism of action of all the major vitamins, the role of metals and other cofactors in augmenting the action of various enzymes, and their importance in key metabolic pathways. They will also explore the biochemical basis for the possible benefits of other nutritional supplements. Students will review current scientific data on nutritional supplements to assess the validity of anecdotal claims in the prevention or cure of diseases. After completing this course, students will be able to explain the mechanism of action of vitamins and nutritional supplements, assess the validity of claims by manufacturers and counsel patients and consumers on any special precautions and

effective uses of these agents. The course will involve the use of problem-based learning, reviews of current scientific literature, and video presentations to reinforce key concepts and issues concerning the use of vitamins and other nutritional supplements. Joseph
Three lecture hours
On Occasion, 3 credits

PH 599 Special Projects

This elective provides students with an opportunity to pursue their specific areas of interest in pharmacy, through working with one of the faculty members on a special project. As most of these independent studies and projects are research oriented, this course will provide students opportunities to develop critical thinking and problem-solving skills by doing one or more of the following: developing a study hypothesis, designing a study, researching a topic, collecting data, and analyzing as well as presenting the data. Through working with faculty members in their area of interest, students also are able to explore in greater depth the knowledge base in that particular area of pharmacy. Students will choose to work with a faculty member in developing, implementing and completing a pharmacy project. The faculty member must be willing to mentor and work with the student to develop a project and guide him/her to completion. Once a student identifies a faculty member, the student will discuss and develop a hypothesis for a mutually agreed-upon project. A project proposal must be developed and signed off on by the faculty and the division director. The student must submit this signed-off proposal to the Associate Dean for Academic and Student Affairs in order to be enrolled in the course. Staff
Hours arranged
Fall, Spring, Summer; 3 credits
May be repeated.

PH 600 Ambulatory Clerkship I

This experiential program will expose the student to the practice of pharmaceutical care in a community setting. Specifically, the student will develop a clear understanding of the role of the community practitioner and will understand the rationale for using prescription and nonprescription products. After completing this course the student will have the competencies to perform the functions of a registered pharmacist, such as dispensing a prescription, compounding an extemporaneous product, counseling patients appropriately, maintaining appropriate records, and advising physi-

cians, dentists, nurses and other health-care professionals about the use of prescription and nonprescription products. In addition, the student will be able to prepare and monitor healthcare plans for a variety of disease states such as asthma, diabetes mellitus, hypercholesterolemia and hypertension. The student's oral and written communication skills will be honed via interactions with other health-care professionals. Pass-Fail only
All sessions, 5 credits

PH 601 Ambulatory Clerkship II

The overall goal of this experiential course is to orient the student to the practice of pharmaceutical care in a second ambulatory environment. Depending on the individual situation, this exposure may take place in a hospital clinic, a medical center, a managed care setting, or other type of ambulatory/community pharmacy setting. After completing this course, the student will be able to perform many of the duties of pharmacists who practice in these types of settings. Irrespective of practice setting, the student will counsel patients, interact with other healthcare professionals and maintain appropriate records. The student's oral and written communication skills will be enhanced as well.
All sessions, 2.5 credits

PH 603 Drug Information Clerkship

This advanced practice experience is designed to provide students with hands-on skills and expertise to retrieve drug information, evaluate the literature and communicate a drug-information response. This clerkship is also designed to provide the student with more experience using computerized database retrieval systems. Students learn to apply a systematic approach to answering drug information requests. Students will be expected to use various types of reference sources, full-text databases, indexing/abstracting services, and Internet-based drug information to answer information requests. In addition, students will evaluate literature, review monographs, write abstracts, write a drug monograph for formulary review, and/or write a column for publication.
All sessions; 2.5 credits

PH 604 Internal Medicine Clerkship I

PH 605 Internal Medicine Clerkship II

These experiences are designed to allow students the opportunity to develop skills based on the knowledge acquired in pre-

vious courses with an emphasis on formulating patient-specific pharmaceutical care plans. As an integral member of the healthcare team, the student will participate in medical rounds at a designated affiliate hospital/medical center. The student will, after completion of the clerkship, be able to demonstrate proficiency in critical thinking skills through the resolution of drug-related problems encountered during the rotations. The student shall be able to evaluate, criticize and modify patient-specific care plans, review and discuss treatment modalities, and provide monitoring parameters for therapeutic regimens and/or various disease states. Students will have ample opportunity to develop and demonstrate adequate communication skills and perform patient counseling.

PH 604 Internal Medicine Clerkship I

All sessions; 5 credits

PH 605 Internal Medicine Clerkship II

All sessions; 5 credits

PH 606 Institutional Practice

This advanced practice experience is designed to familiarize the student with various aspects of institutional pharmacy practice by rotating through various areas within the pharmacy service of a hospital or medical center. Students will be exposed to various modern distributive systems, administrative functions, medication use evaluations, hospital committees, as well as the institution's policies and procedures. After completion of the clerkship, the student will have developed skills needed to make decisions involving the selection, storage and distribution of various pharmaceuticals, will be proficient in compounding, packaging and labeling practices of the institution, will be proficient in aseptic technique involving sterile products, will be able to decide which dosage forms and routes of administration are preferable for patient-specific needs, and will gain valuable experience in counseling patients about their pharmacotherapy. Additionally, the student will have the opportunity to develop his/her sense of ethics and professionalism.

Pass-Fail only

All sessions; 5 credits

PH 607 Pharmacy Grand Rounds

Monthly rounds are held in residence at the College of Pharmacy during the senior experiential phase of the professional program. Students are required to attend the rounds which will focus on new and recent developments in pharmacy and the provision of pharmaceuti-

cal care. Presentations and discussions may include issues of pharmacotherapeutics, pharmacoeconomics, pharmacy law, current professional concerns and initiatives, and innovative career pathways.

Course may be repeated. Monthly rounds. Pass-Fail only

Co-requisite: Registration for 600 level experiential courses.

All sessions: 0 credits

PH 621-699 Elective Advanced Practice Experiences (Clerkships)

Advanced practice experiences (previously known as senior clerkships) are, for the most part, designed to provide students with an opportunity to practice pharmaceutical care in an area of their choice. This elective experience provides students with the opportunity to expand their knowledge base in a specific area of practice and then use this knowledge to provide optimal patient care. In addition to interacting with patients and/or their caregivers, the course provides students with an environment in which they can interact with physicians, pharmacists, nurses, and other healthcare professionals. Certain advanced practice experiences allow the student to gain different types of experiences than described above. Specifically, the student may be able to gain experience in conducting laboratory or clinical research, obtain exposure to different career paths in the pharmaceutical industry, and learn about novel ways to provide medications to patients (e.g., Managed Care PBM). A detailed course syllabus that outlines specific learning objectives, competencies and assignments specific to an elective experience will be provided to students at the beginning of the clerkship. The following list of elective experiences is an evolving one and may be altered at any time. All students must complete one elective advanced practice experience. Staff

On Occasion, 5 credits per course

AIDS

PH 621 Drug Information in Health Care Publishing

PH 622 Advanced Drug Information—Institutional-based

PH 623 Advanced Drug Information—University-based

PH 624 Extended Internal Medicine

PH 625 IV Admixture — Home Infusion

PH 626 Hospital Pharmacy Administration

PH 627 Treatment of Substance Abuse

PH 628 Community Ambulatory Compounding

PH 629 Extended Ambulatory Care		
PH 630 Cardiovascular Pharmacotherapy		
PH 632 Critical Care		
PH 633 Emergency Medicine		
PH 634 Geriatric Pharmacotherapy		
PH 635 HIV		
PH 636 Infectious Diseases		
PH 637 Pediatric Pharmacotherapy		
PH 638 Psychiatric Pharmacotherapy		
PH 639 Neonatal Intensive Care		
PH 640 Long-term Care		
PH 641 Managed Care — PBM		
PH 642 Medication Policy Development		
PH 643 Medical Communications in the Pharmaceutical Industry		
PH 644 Medical Writing for a Pharmacy Periodical		
PH 651 Health Outcomes Research and Software Development		
PH 652 Pharmaceutical Medical Information		
PH 654 Clinical Education Consultant — Field Based Industry Experience		
PH 674 Asthma Education		
PH 680 Traumatic Brain Injury		
PH 681 Oncology Pharmacotherapy		
PH 682 Endocrinology Pharmacotherapy		
PH 683 Nuclear Pharmacy		
PH 697 Pharmaceutical Research and Development		
PH 698 Research		
PH 699 Special Project		

ADMISSION

Admission to the pharmacy program of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences is offered to men and women of scientific aptitude whose prior academic performance indicates that they are capable of successfully completing a challenging profession-oriented curriculum.

Admission to the preprofessional program (P-1, P-2) does not constitute acceptance nor does it guarantee progression to the professional program (P-3). Progression from the preprofessional phase to the professional phase of the program is competitive. Only those students who start as freshmen, who have a minimum cumulative 3.0 GPA overall and in the required math/science courses, and who complete all preprofessional courses no later than the end of the Spring semester for the next Fall semester professional class will receive first priority for an institutional preference for consideration of admission into the professional program. Preprofessional pharmacy students should consult the information contained under the heading "Progression Requirements" on page 27.

Admission into the professional phase of the program is highly competitive. While objective measures of academic achievement and potential (grade-point average (GPA), score on Pharmacy College Admissions Test (PCAT), course load, selection and successful completion rate) are factors heavily considered for admission, they are not the sole criteria. In addition to academic competence other factors such as communication skills, community service, extracurricular activities, and demonstration of leadership, understanding for the profession of pharmacy and motivation for entering the profession; work experience; letters of recommendation particularly those from alumni of the College and other individuals known to the College; and factors of diversity including but not limited to academic and professional background, geography, educationally or economically disadvantaged, culture and multilingual ability are among the selection criteria that may be considered by the College.

New students for the pre-professional program may enter in the Fall, Spring or Summer (see academic calendar, p.??). New students for the professional program (P-3) may enter only in the Fall semester. In order to receive full consideration, applications for the professional



program should be submitted as early as possible and should be completed by the following date:

For admission to Fall Semester—**February 15**

This date is subject to change and interested applicants should consult with the Office of Admissions for application deadlines.

A non-refundable fee of \$30.00 must accompany the application.

Candidates are notified regarding acceptance within one month of the completion of their files. Once a candidate is accepted, he or she is required to make a deposit of \$100.00 to reserve a place in the entering class (P-1). For admission into P-3, the deposit is \$500.00. This deposit is applied to the regular tuition charges. It is not refundable should the student decide at a later date not to attend the Brooklyn Campus.

All applications and correspondence pertaining to admission to the pharmacy program should be addressed to:

**Office of Admissions
Long Island University
Brooklyn Campus
1 University Plaza
Brooklyn, NY 11201-5372
Telephone: (718) 488-1011**

Requirements for Admission

Admission to the pharmacy program is based upon an applicant's total academic record. Additionally, a variety of other factors as outlined below may be considered in selection of students for the program. Each candidate must submit a completed application form by the stated deadline date. Interested applicants should consult with the Office of Admissions in order to receive the proper forms for submission and to be informed of the appropriate deadline dates. Candidates should be prepared to present official records of all prior high school and college work. For admission to the preprofessional program a personal interview may be required. Interviews are required for students applying for advanced standing and admission into the professional program (P-3).

Preference will be given to those candidates deemed capable of successfully pursuing scientific work and of meeting the multiple responsibilities of the health-care professional in today's society.

The following criteria for admission represent "guidelines" for the selection of those students who will be able to benefit from the pharmacy curriculum and contribute effectively to society and the future of the profession. Objective data, such as grade-point averages and standardized test scores, are relied upon heavily, since these data constitute the most reliable basis for prediction of success or

failure in the pharmacy curriculum. However, other factors are also considered: the substance and level of course work completed; whether academic performance is consistent; whether academic performance has continuously improved; and the academic institutions previously attended, since standards vary from school to school and grades at some schools represent greater academic achievement than at others.

Consistent with the broad purposes of the educational program, non-cognitive attributes are also considered. Strong motivation and the potential for continued personal development as well as some familiarity with the healthcare field are desirable traits for professional school students. Participation in school and community activities indicates breadth of talent and interest and, in reference to service activities, the sense of altruism required in the healthcare professional.

Recommendations from teachers, guidance personnel and employers, while not required for an application to be complete, are seriously considered when they are available. Impressions formed during the personal interview are crucial when an applicant's objective credentials only marginally qualify him or her for admission.

Entry from High School

Applicants to the first year should have successfully completed, at the time of application, at least 16 academic units in a registered four-year secondary school. High school course work should include at least 2-1/2 units of mathematics (through Intermediate Algebra) and at least one unit in either chemistry or biology; course work in both sciences is preferable. Students with a minimum high school average of 90 or a minimum high school average of 85 and a minimum of 1100 score on the Scholastic Aptitude Test (SAT) or satisfactory score on the American College Testing Program (ACT) are given first preference for consideration of admission.

Applicants holding a General Equivalency Diploma (GED) must present an official GED score report and an official report of their performance on the Scholastic Aptitude Test (SAT) or the American College Testing Program (ACT).

Transfer

Students applying for advanced standing may be considered on a competitive basis for admission into either the preprofessional program (P-1, P-2), or the professional program (P-3). Each year the College evaluates the number of seats that may be available for students desiring admission with advanced standing. The numbers of students accepted for admission with advanced standing varies considerably from year to year. In some years, due to the number of seats occupied by continuing students, the College may be unable to offer admission to any students seeking advanced standing. Admission with advanced standing to the preprofessional program does not constitute or guarantee acceptance or progression to the professional program. A separate application for admission to the professional program must be filed (see Progression Requirements). In addition to the basic academic requirements listed immediately below, students applying for advanced standing and admission into the professional program (P3) must present an official report of their performance on the Pharmacy College Admissions Test (PCAT) and be prepared to participate in a personal interview and writing assignment.

Students applying for advanced standing should have attained in prior college course work a minimum grade-point average of 3.00 overall and 3.00 in the required science courses. Applicants in good standing at accredited senior and community colleges may receive credit for subjects that correspond to or are of equal value to courses comprising the preprofessional curriculum. Grades of "C" or better at institutions other than the branches of Long Island University are acceptable for transfer.

All students seeking transfer must provide current transcripts from each college or university attended and be prepared to supply upon request the appropriate catalogue(s) describing the course completed for which transfer credit is requested.

Applicants who have received bachelor's degrees or advanced degrees in fields other than pharmacy should follow the same procedures as students applying for transfer.

Transfer from Other Colleges of Pharmacy

Students seeking transfer from colleges of pharmacy accredited by the

Accreditation Council for Pharmacy Education (ACPE) must provide, in addition to official transcripts of all academic work, a statement of their reasons for seeking transfer and a letter of evaluation from the dean of their present college of pharmacy.

Progression Requirements

Progression from the Preprofessional (P-1, P-2) to the Professional Program (P-3)

Progression into the professional phase of the program is highly competitive. While objective measures of academic achievement and potential (grade point average (GPA); score on Pharmacy College Admissions Test (PCAT); course load, selection and successful completion rate) are heavily considered factors for progression they are not the sole criteria. In addition to academic competence other factors such as written and oral communication skills; community service, extracurricular activities, and demonstration of leadership; understanding for the profession of pharmacy and motivation for entering the profession; work experience; letters of recommendation particularly those from alumni of the college and other individuals known to the college; and factors of diversity including but not limited to academic and professional background, geography, educationally or economically disadvantaged, culture and multilingual ability are among the selection criteria for progression that may be considered by the College. Impressions formed and information gathered during the required personal interview and writing assignment are weighed heavily in evaluating factors beyond academic competence.

To receive first consideration applicants must have achieved a minimum GPA of 3.00 in all attempted college work and a minimum GPA of 3.00 in all attempted and required science and math courses (specifically Mathematics 30 and 40, Biology 3, 4 and 131, Physics 27, Chemistry 3, 4, 121 and 122) when considered separately. First consideration is also given to those applicants who satisfactorily complete all P-1 and P-2 course requirements by the end of the Spring semester for the following Fall. An application for progression must be submitted to the Office of Student and Professional Affairs in the College by the specified deadline date. Students should consult

with the Office of Student and Professional Affairs to determine the appropriate deadline date. The Pharmacy College Admissions Test (PCAT) is required for progression. An official PCAT score report should be submitted to the Office of Student and Professional Affairs. A personal interview and an on-campus writing exercise are required. Not all applicants for progression will be afforded the opportunity for a personal interview and writing exercise. Applicants selected for an interview and on-campus writing exercise will be from among those in the application pool demonstrating the highest academic achievement and potential.

Students who are accepted and enroll as freshmen pharmacy majors in the pre-professional phase of the program receive an institutional preference for consideration of admission into the professional phase of the program provided they complete the prescribed preprofessional program by the conclusion of the spring semester of their second year of study. A varying percentage of available seats in each professional class are set aside for such students depending upon the overall number and overall level of demonstrated academic performance of eligible students with institutional preference in any given year. The remaining number of seats are open to all applicants for the professional phase including those with institutional preference on a competitive basis, provided such applicants meet the academic qualifications of the program. Progression into the professional phase of the program is not guaranteed for students receiving institutional preference since the ultimate selection is determined through the application of the criteria discussed in the preceding paragraphs. Due to the highly competitive nature of the program not all students meeting the basic academic requirements of the program will be selected for progression into the professional phase.

Progression Requirements During the Professional Program

1. To enter P-4 of the pharmacy program, a student must maintain a 2.00 ("C") in P-3 professional courses.
2. To enter P-5 of the pharmacy program, a student must meet the following requirements:(a) satisfactory completion of all P-3 and P-4 required

courses.(b) maintenance of at least a 2.00 ("C") cumulative grade-point average (GPA) in P-3 and P-4 of professional courses.

3. To enter P-6 of the pharmacy program, a student must have:(a) satisfactorily completed all P-3, P-4 and P-5 required courses.(b) maintained at least a 2.00 ("C") cumulative grade-point average in P-3, P-4 and P-5 professional courses.

Students are encouraged to work closely with the Office of Students and Professional Affairs at the College of Pharmacy, which provides counseling, academic advisement and programming. For information, call (718) 488-1234.

Visiting Student Authorization

Matriculated students at the Brooklyn Campus may only take courses at another institution as a visiting student under the following conditions:

1. Students must file an "Application to Take Courses at Another Institution" with their respective Dean's office. Students must provide evidence of course equivalency to the corresponding Brooklyn Campus course. Note: Permission must be granted by the Dean, not the student's academic department.
2. The other institution must be a four-year accredited institution (two-year community colleges are unacceptable).
3. Students may not take a course at another institution within the New York City metropolitan area (within a 50-mile radius of the Brooklyn Campus) if the course is being offered at the Brooklyn Campus.
4. If a course required for graduation is not being offered at the Brooklyn Campus in a given semester, or the student lives outside the New York City metropolitan area, then permission can be considered.
5. Students must be in good academic standing; students on academic probation cannot be granted permission to attend other institutions.
6. The visiting student authorization becomes automatically invalid if, by the conclusion of the term during which it is granted, the student is placed on academic probation.
7. Only letter grades of C or above are acceptable for transfer credit. Grades of D or P are not transferable. Grades earned at another institution are not

used in the computation of either the student's major or cumulative average, they do not remove F grades earned at the Brooklyn Campus, nor do they count toward fulfillment of residence requirements or the requirements for graduation with honors.

8. Visiting student authorizations are granted for a maximum of 9 credits.

Visiting Students

The College accepts visiting students who wish to audit or enroll for credit in pharmacy courses on a non-matriculated basis, depending on space availability. Such applicants must submit a Visiting Student Application (available from the Office of Admissions) indicating the specific courses for which they wish to enroll. Applicants who have completed all stated prerequisites will be allowed to enroll, with the approval of the course instructor(s).

Students Presenting Foreign Credentials

Foreign applicants must submit all academic credentials, including a record of secondary school grades for the final three years, and results of any examination rendering a student eligible for university matriculation in his or her own country. Students are expected to have demonstrated adequate preparation in mathematics and English. All documents submitted must be translated into English and notarized.

All applicants are required to present their results on the Scholastic Aptitude Test (SAT). The Test of English as a Foreign Language (TOEFL) is required of all students for whom English is not the native language.

Foreign students seeking transfer credit for course work completed at a non-U.S. college or university must present official transcripts from each institution attended and an official syllabus (written in or translated into English) showing duration and content of each course for which transfer credit is sought.

Health insurance coverage is compulsory for all international students including their dependents. Information pertaining to the health insurance coverage may be obtained from the Office of International Students, which assists students on campus.

Students holding F-1 (student) visas are required by law to be fully matriculated and be registered for at least 12 credit hours per semester.

Proficiency in the English language is required, and a student who needs additional study in English may be required to take English courses for foreign students at Long Island University.

Applications from international students must be accompanied by a nonrefundable \$30.00 application fee and received no later than May 1 for the Fall semester and November 1 for the Spring semester. When credentials are complete and found to be satisfactory, the applicant will be required to submit a \$100.00 deposit and a certified statement of financial support. The deposit will be applied to tuition and is not refundable should the student decide not to attend the University. An I-20AB or IAP-66 form will be issued upon receipt of the deposit and statement of financial support. Students should not make plans to come to the United States until they have received the immigration form.

Students should be aware of the high cost of living in New York City and the tuition rates and come prepared to finance their education. A limited number of scholarships are available to students on non-immigrant visas and are awarded primarily to students who have been in attendance at least one year.

Renewing Applications

An applicant who has been accepted for admission but who fails to enroll and wishes to enter in a subsequent semester must reapply by writing to the Dean of Admissions. An applicant seeking to defer matriculation must meet all requirements in force at the time of his or her re-application.

Brooklyn Campus Placement Examinations

All entering freshmen are required to take placement examinations in English composition, reading comprehension and, depending upon Scholastic Aptitude Test scores, mathematics before registering. Entry into or exemption from developmental courses in reading and mathematics and from proficiency

courses in English and mathematics depends on the results of these placement examinations. All entering freshmen students are encouraged to take the proficiency examinations in computer literacy before registering. These examinations serve as proof of minimum competency in these areas. Inquiries concerning the placement examinations should be addressed to Ms. Winifred Donahue, The Learning Center, Long Island University, Brooklyn Campus, 1 University Plaza, Brooklyn, NY 11201.

Advanced Placement Examinations

Candidates who have taken courses in high school under the Advanced Placement Program of the College Entrance Examination Board should arrange to have their scores sent to the Office of Admissions. Placement and/or credit may be granted for work that meets certain levels of achievement.

Computer Literacy Requirements

All undergraduate students admitted to the Brooklyn Campus after the fall of 2002 are required to demonstrate basic computer skills in each of the following areas prior to graduation: (1) MS Windows, (2) MS Word, and (3) Internet/e-mail skills. Students entering in Fall 2006 may satisfy this requirement in one of three ways:

By passing all three sections of the Computer Skills Evaluation Exam (CSEE) listed below, with a C+ or higher.

or

By passing all three designated Computer Science courses listed below, with a C+ or higher.

or

By combining options 1 and 2. A student may substitute a passing grade of C+ or higher in the designated Computer Science course(s) for the corresponding section(s) of the CSEE.

Designated Computer Science Course
Corresponding CSEE section
CS-9 (Introduction to Windows Environment) Windows
CS-9A (Word Processing) Word
CS-9H (Internet WWW) Internet/e-mail

Students entering with an associate's or bachelor's degree from another accred-

ited institution will be exempt from the core curriculum computer literacy requirement and must contact the Testing Center to request this exemption. Transfer students entering in Fall 2006 can also meet this requirement if they receive appropriate transfer credit from the Office of Admissions.

The CSEE is administered by the Testing Center.

University Honors Program

The University Honors Program is for academically superior students of all majors in all units of the Brooklyn Campus. Applicants are processed directly through the University Honors office, and those invited to join are counseled and programmed by the University Honors staff. The program provides most core courses required for graduation.

Designed to provide maximum intellectual challenge for students of superior ability, the program emphasizes integrated interdisciplinary study and independent research. Classes are small and conducted as seminars; frequent field trips are planned; special privileges are granted to members.

Collaborative programming can be obtained between the Honors Program and professional programs.

Veterans

The rules for admission and advanced credit for veterans under Federal and State laws are the same as those for other students.

ACADEMIC REGULATIONS

Academic Responsibility

Candidates for a professional degree from the College of Pharmacy are expected to know the graduation requirements set forth in this publication. It is the responsibility of the student to know and comply with the academic requirements and

regulations of the College as well as those of Long Island University.

All students must seek the counsel of an academic advisor. Students must also meet basic standards of performance established for each class with respect to attendance, promptness in completing assignments, correct English usage, accuracy in calculations, neatness and general quality of workmanship. Fulfillment of these fundamental responsibilities must be recognized by the student as an essential prerequisite to achieving satisfactory academic standing and to being recommended by the faculty for a degree.

Academic Ethics

Students are expected to conduct themselves in accordance with the highest academic standards of honesty and integrity. The acts of, or the intent to engage in the acts of, cheating, plagiarism, illegitimate possession and/or disposition of examinations, and similar acts, are grounds for suspension or dismissal from the University. Students are advised that plagiarism consists of any act involving the offering of the work of someone else as the student's own, including the use of work authored by a paid or volunteer person or organization contracted by the student. Students participating in experiential courses must adhere to all rules and regulations of the specific hospital, long-term care facility, industry site, etc.

Attendance

Successful work in the College of Pharmacy is dependent upon regular class attendance. All students are expected to attend classes and to participate in classroom activities. Faculty have the right to weigh attendance and class participation in determining grades. Consequently, excessive absences may impact negatively on the evaluation of a student's performance.

First-year (P-1) and second year (P-2) students shall be allowed no more than two class-hour absences per credit hour. All first-year (P-1) and second-year (P-2) students enrolled in science laboratory courses may not be absent more than 20% of laboratory time (Brooklyn Campus Bulletin).

For students enrolled in years P-3, P-4, P-5 and P-6, faculty will inform students at the beginning of each semester of poli-

cies governing attendance as written in the course outline or syllabus distributed to the students.

Attendance is required of all students in years P-3, P-4, P-5 and P-6 in recitations, laboratories and in Introductory and Advanced Practice Experiences. Students in the experiential programs may be permitted to leave the sites from time to time when returning to the College for special events, upon the approval of the preceptors.

Full-Time Students

A full-time student is one who is carrying 12 or more credit hours in each semester.

Summer Session(s)

A maximum of eight credit hours of course work is allowed during any one summer session except for the sixth-year student's advanced practice experiences or by special permission from the Associate Dean.

Auditing of Courses

Auditing of courses (without credit) is allowed only with the permission of the Associate Dean.

The audit fee is set at one-half the regular tuition fee, plus the full application fee for new students. On behalf of special programs of instruction, the Associate Dean may authorize exceptions to the rules for auditing.

Dean's List

The Dean's List for each semester of each class year consists of those matriculated students who are registered in that class year, have completed at least 12 credits during that semester, received a passing grade in every subject for that semester and achieved a grade-point average of 3.5 or more for that semester. Students who earn a C-, D, F, W, WF, UW, U, INC, or ABS in any semester, even though the symbols are subsequently changed to grades, may not be placed on the Dean's List for that semester.

Examinations

Absence from Tests and Examinations

If a student is absent from any test or examination, including a final examination, the instructor may afford or deny him or her an opportunity to make up the work that was missed. In such cases, the instructor is the sole judge of the validity of the student's excuse.

Absence from a Final Examination

Any student who for any reason is absent from a final examination and who wishes to take a deferred final examination is required to apply, in writing, within five days to the Associate Dean to ask for permission to take a deferred final examination, giving the reason for the absence from the examination. The student also may need permission from the course instructor, as noted in individual syllabi.

If the absence was caused by sickness or injury, the letter must be accompanied by a medical certificate stating when the illness began or the injury was sustained, and the number of days of confinement recommended by the physician. If the absence was caused by death in the immediate family, the student must indicate the date of death and the relationship to the deceased.

If the absence is justifiable, permission will be granted to take a make-up examination for which a specific fee is charged for each exam up to three exams. An admission card or other suitable evidence of payment must be granted to the instructor before such examinations are given.

Grades and Symbols

The following grades are used: A, A-, B+, B, B-, C+, C, C-, D, E, F

The following symbols are used:

U: The symbol U is assigned in certain proficiency courses when a student has completed all work in a fashion unacceptable to warrant a passing grade. The student must repeat the course in the semester immediately following. The symbol U is not computed in the student's average. A student may receive only one U symbol in any course. On the second enrollment, the student must either satisfactorily complete the course or receive an F.

ABS: The symbol ABS (Absence from Final Examination) is assigned when a student has failed to take the final examination in a course in which he or she was doing satisfactory work. If a student fails to take a deferred final examination, the ABS is changed to F at the end of the next semester. If the ABS is made up, the final grade will appear on the student's permanent record as I followed by the grade assigned. A grade of F is assigned when a student misses the final examination in a course in which the student was doing unsatisfactory work.

INC: The symbol INC (Incomplete) may be assigned if, for reasons acceptable to the instructor, a student has failed to complete a part of the required course work. An INC is given only at the discretion of the faculty member. It is the student's responsibility to make specific arrangements with the instructor to complete the course work and to have the grade submitted to the Office of the Registrar before the end of the next semester. If the course is completed within the next semester, both the INC and the final grade will appear on the student's permanent record. Satisfactory completion of the course does not eliminate the original "Incomplete" designation.

An INC grade which is not made up during the next semester becomes an F.

W: The symbol W (Withdraw) is assigned when a student officially withdraws from a course in which the student was doing satisfactory work. Students must obtain a Withdrawal Form from the Office of the Registrar and have this form signed by the instructor of the course(s) concerned. (See also under WITHDRAWAL, p. 33.)

WF: The symbol WF (Withdraw, Failed) is assigned when a student withdraws and is doing unsatisfactory work. WF is not computed in the student's average.

UW: The symbol UW (Unauthorized Withdrawal) is assigned when a student unofficially withdraws from a course, or registers but never appears in class. The UW is not computed in the student's average.

PASS-FAIL OPTION: In elective courses, the student has the option of choosing his or her course grade on a P-F basis or on the regular letter-grade basis. This choice must be made and indicated to the instructor no later than the official withdrawal date for the course. Certain required courses must be taken

on a Pass-Fail basis. Grades in Special Projects courses and certain Clerkships are P and F.

NGR: A temporary symbol of NGR (No Grade) has been adopted for instances when no grade has been submitted at the time grades are recorded. NGR will automatically be noted by the computer when the instructor has not yet submitted the course grades, or leaves one grade blank.

Changes on Academic Record

Students have until the time of their graduation to have changes made on their academic records. Once a student has graduated, the academic record is frozen and cannot be changed retroactively.

Repeating Courses

Students may repeat any course to improve the grade, no matter what the previous grade was. To repeat a course more than once, they must have permission of the Associate Dean.

All "F"-graded professional course work must be successfully repeated as soon as the course is offered again (exclusive of summer sessions).

A course in which a student received a grade of "C" may be repeated only if all courses in which an "F", "D", or "C-" grade previously earned have been successfully repeated with a "C" or better.

A required course in the professional curriculum may not be repeated more than twice. Failing a required professional course three times is cause for dismissal. Credit will be earned only once, and the second grade, whether higher or lower, will be computed in the student's GPA. After the second time a student takes a course, all grades except the first will be computed in the student's GPA.

The College is not obligated to offer courses that the student has failed in the academic term immediately following the failure.

Quality Points

The numeral 4 has been assigned to the grade of A, 3.67 to the grade of A-

3.33 to B+, 3.0 to B, 2.67 to B-, 2.33 to C+, 2.0 to C, 1.67 to C-, 1.0 to D, and 0 to F. The quality points to which a student is entitled are computed by the formula $X = N \times Y$, where X is the number of quality points, N the number assigned to the grade, and Y the number of credits.

The grade-point average is obtained by dividing the sum of the quality points received in all courses by the total number of credits, including unrepeatable F's. A credit is equivalent to 1 lecture or recitation hour and/or 2-3 laboratory hours per semester.

To graduate, a student must have a quality-point ratio of no less than 2.0 in all work and 2.0 in the professional course work.

Academic Standards

The College reserves the right to dismiss, suspend, or probate, at any time, a student whose academic record is unsatisfactory. Prior notification or prior academic probation is not a necessary precursor to academic dismissal or suspension of students who have unsatisfactory academic records or progress. Any student who at any time fails to demonstrate satisfactory progress as indicated below shall be subject to immediate academic dismissal or suspension upon determination or opinion of the College that the noncompliance with satisfactory progress is of such nature that a period of academic probation shall not be afforded to the student. To be in good standing, a student must make satisfactory progress toward fulfilling all requirements of the program in which he or she is enrolled. Failure to do so will be cause for academic dismissal.

Satisfactory progress is ordinarily demonstrated by completing the six-year Doctor of Pharmacy program in the projected six-year time frame; completing the necessary required and elective courses in the sequence as presented on page 15 of this bulletin; maintaining an overall cumulative grade-point average (GPA) of 2.0 or greater in all courses attempted; maintaining a cumulative grade-point average (GPA) of 2.0 or greater in all professional pharmacy courses attempted that are herein prescribed for the third, fourth, fifth and sixth year of study; achieving a semester, term or session grade-point average (GPA) of 2.0 or greater for each semester, term or session attended; and satisfactory and timely completion of additional program requirements, such as

completion of the Brooklyn Campus proficiency examinations in computer literacy, satisfaction of the requirements of the Writing Across the Curriculum Program and certification in cardiopulmonary resuscitation.

The College of Pharmacy is cognizant that there may be a variety of reasons why students may not complete the Doctor of Pharmacy program in the projected six-year time frame. Students who meet all other requirements for satisfactory progress ordinarily are not considered to be making unsatisfactory progress, should they require additional courses as a result of their Brooklyn Campus English and/or mathematics placement, should personal circumstances require a leave of absence from the College or a reduced schedule, if service requirements for students serving in the Armed Forces of the United States delay their progress, or if progress has been delayed as a result of unsatisfactory completion of course(s) or as a condition of required remediation due to the academic probationary status of the student. Upon entering the professional phase of the program (third year) the maximum allowable time for the completion of all requirements and the awarding of the Doctor of Pharmacy degree is six years for the projected remaining four years third, fourth, fifth and sixth years), exclusive of time spent in the armed forces. Students may file a request for an extension of the maximum allowable time with the Associate Dean. Students should include in their request an explanation of the circumstances under which they require an extension to complete their degree requirements. The Associate Dean will consider the request and may consult with the College's Scholastic Committee regarding the request. The student will be duly notified as to whether or not his or her request for an extension has been granted. Any courses outside the time limit will not count as credits toward the degree unless approved in writing by the Associate Dean.

Failure to satisfy any of the above-listed indicators of satisfactory progress is cause for academic dismissal, suspension or probation and any one or more of the three (dismissal, suspension, or probation) will be applied immediately upon failure to maintain satisfactory progress. If dismissal or suspension are not applied then probation will apply.

Academic probation is most typically the initial official action for a student failing to make satisfactory progress. Every attempt is made by the College of Pharmacy to duly notify students that they have been placed on probation. Students in the College of Pharmacy, as students

enrolled in a professional program, are expected to be fully aware of the requirements for satisfactory progress and are expected to be fully capable of determining whether their own academic progress is in compliance with the requirements for satisfactory progress. As such, all students are further expected to understand that if academic dismissal or suspension is not immediately applied in their case that their status is probationary, whether or not they receive notification from the College of Pharmacy in that regard. All students failing to make satisfactory progress are expected to take initiative towards remediation of unsatisfactory progress.

Academic Probation

Conditions of a student's academic probation are as follows:

1. Typically, the maximum number of semesters, terms or sessions exclusive of summer sessions, of academic probation permitted is two during the preprofessional phase (P-1 & P-2) of study and two during the professional phase (P-3, P-4, P-5 and P-6) of study. The two semesters may be either consecutive or separate. Any student who is on or qualifies for probation for a third semester in either the preprofessional phase or professional phase of study will, with great probability, be academically dismissed from the College. On rare occasions, upon review by the Associate Dean and/or the College's Scholastic Committee, additional semesters, terms or sessions of academic probation may be afforded the student in order for the student to remedy his or her noncompliance with the standards of satisfactory academic progress, if it is the determination and/or opinion of the Associate Dean and/or the College's Scholastic Committee that such extension of the probationary period might reasonably result in a remediation of the unsatisfactory academic progress. When such extension of academic probation is granted, it shall not be construed that further extensions will be granted or that the possibility of academic dismissal or suspension is lessened should non-compliance with the standards of academic progress continue to exist at the conclusion of the probationary period extension. Students on extensions of academic probation are typically required to conform to a written agreement regarding their academic progress. Failure to achieve the levels of academic performance as specified in the agree-

ment is cause for academic dismissal from the College.

2. Students who are not in compliance with the standards of academic progression for any reason are not permitted under any circumstances to enroll and/or participate in any courses with experiential components. Students who come into noncompliance with the standards of academic progression at any time that they may be enrolled or participating in any courses with experiential components will immediately be required to withdraw from those courses and will not be permitted to re-enroll or participate in such courses until their noncompliance with the standards of academic progression are remedied.
3. A student who has been placed on Academic probation is limited in participation in extracurricular activities. A probationary student may hold membership in clubs, organizations and fraternal societies. A probationary student is barred from holding any office, chair or committee seat in such clubs, organizations and fraternal societies. A probationary student may attend lectures and other events sponsored by such clubs, organizations and fraternal societies and/or by the College that are deemed to be of an educational nature.
4. A student on academic probation is/may be required to participate in academic counseling and/or enroll in a remedial program of study.

Academic Suspension

Academic suspension may occur in those cases when it is the determination of the College of Pharmacy that the particulars of a student's failure to achieve satisfactory progress are of such nature that a period of time away from the College would likely improve the prospects for remediation of unsatisfactory progress when the student is permitted to resume his/her studies. By way of example, academic suspension might be prescribed when a student indicates that his/her failure to maintain satisfactory progress is due to some type of personal circumstance, such as infirmity, family problems or economic difficulties. In such cases, the College may require a period of academic suspension of from one-to-two semesters of study until such time that the extenuating causes that have been determined to be factors in the student's unsatisfactory progress have been reasonably ameliorated. Academic suspen-

sion may also be applied when the student's academic difficulties have created a situation where he/she may need to repeat courses in order to meet the prerequisite qualifications to move forward into the next term of study.

Academic Dismissal

The College reserves the right, as previously noted, to academically dismiss a student at any time if a determination is made, after a thorough review by the Associate Dean and/or the Scholastic Committee of the College, that the student's academic record is unsatisfactory or otherwise does not comply for any reason with the standards of satisfactory academic progress. Typically, academic dismissal occurs whenever a determination has been made by the College of Pharmacy that a student's failure to maintain satisfactory progress is of such severity or length of time, as defined by the following guidelines, that the student should be permanently withdrawn from the College. When applying a standard of length of time to an academic dismissal, except in those rare instances, as noted above, where an extension of academic probation may be granted, dismissal will be applied whenever the student has maintained, for two semesters, an overall cumulative grade-point average (GPA) of less than 2.0 in all courses attempted, two semesters of maintaining a cumulative grade-point average (GPA) of less than 2.0 in all professional pharmacy courses attempted that are herein prescribed for the third, fourth, fifth and sixth year of study, or two semesters, terms or sessions accumulating two instances of a grade-point average (GPA) of less than 2.0 for a semester, term or session attended. When applying a standard of severity to an academic dismissal, a dismissal may be applied at any time that a student has acquired an overall GPA of 1.5 or less in all courses attempted or a GPA of 1.5 or less for a semester, term or session attended. For students in the professional phase of the program (3rd, 4th, 5th or 6th year) academic dismissal may be applied if the GPA in all professional courses attempted that are herein prescribed for the third, fourth, fifth and sixth year of study is 1.5 or less after one semester of study in the professional phase, 1.67 or less after two semesters of study in the professional phase, or 1.9 or less after three or more semesters of study.

A student may appeal an academic dismissal once by petition to the Scholastic Committee of the College. The petition

should present a thorough analysis by the student of the reasons for having failed to maintain satisfactory academic progress and a comprehensive plan for rectifying his/her deficiencies within a reasonable period of time, preferably after one semester of study but not exceeding two semesters of study, and that conforms with all other academic regulations of the College. The petition is considered by the committee which may request that the student appear before this committee to substantiate his/her position and answer questions. The committee then makes its recommendations on the petition to the Associate Dean. Students are advised that successful appeals of academic dismissals are rare and usually occur only in those circumstances where substantive underlying causes for unsatisfactory academic progress were previously unknown to the College. Generally, as noted above, in cases where substantive underlying causes exist for unsatisfactory progress, an extension of academic probation will have been granted to allow the student additional opportunity to remedy his/her noncompliance with satisfactory academic progress. Decisions of the Scholastic Committee and/or the Associate Dean that a student believes may demonstrate arbitrary and capricious treatment or to be fundamentally unfair may be appealed, as a final step, to the Dean of the College of Pharmacy.

Academic Status

Third-Year Student: A student who has completed the preprofessional requirements with a minimum GPA of 3.00.

Fourth-Year Student: A student who has finished all third-year courses with a minimum GPA of 2.00.

Fifth-Year Student: A student who has completed all fourth-year courses with a minimum GPA of 2.00.

Sixth-Year Student: A student who has completed all fifth-year courses with a minimum GPA of 2.00.

Prerequisites

Students are not permitted to register for any course unless prerequisites have been successfully completed. Students are responsible for knowing the prerequisites for courses as stated in this bulletin. Students found to be enrolled in a course for which they have not met the prerequisites will be withdrawn from the course

regardless of the point in that course where the discovery is made. Students are advised that the lack or the failure of a prerequisite course may significantly impede their academic progress by preventing their enrollment in one or more subsequent courses. Many courses are offered only once a year; hence failure of a course may result in a delay of a year until such course is repeated and the student is authorized to enroll in subsequent courses.

Withdrawal from All Courses

Students in good academic standing who wish to spend a period of time away from the College or students who are on academic probation and who want to withdraw from all classes must give a valid reason and (a) obtain, from the Office of the Registrar, an Application for Permission to Withdraw, complete it, as indicated, and have it approved by the Associate Dean, and (b) clear their financial account.

Withdrawal from One or Several Courses

When students are registered for a course, they are considered to be in attendance until the date of their official withdrawal.

Readmission

If a student has been in good academic standing, has withdrawn from all courses and desires to return to the College of Pharmacy within one year of his/her withdrawal, he/she may be considered for readmission by completing an application for readmission, available from the Admissions Office, subject to approval of the Associate Dean for Academic and Student Affairs. Students are advised that readmission is not guaranteed except in such cases where a leave of absence has been granted by the Associate Dean and then only within the time frame established for the leave of absence. Students who have been withdrawn from the College for more than one year are generally not granted readmission. Such time limits do not apply to students who have been fulfilling service requirements in the Armed Forces of the United States.

If a student has been suspended or dismissed for disciplinary reasons and

desires to return to the College of Pharmacy, his/her application for readmission is referred to the Office of the Associate Dean. The Associate Dean's office will advise the student of the following procedure which may be required for readmission: the student may be granted a hearing by the appropriate faculty committee for consideration of action on his/her readmission application. The student is required to submit a written petition stating the nature of his/her problems and a workable solution to those problems. The application for readmission and the petition are then considered by the appropriate faculty committee. The student may be requested to appear before this committee to substantiate his/her position and answer questions. The committee then makes its recommendations and/or recommends performance conditions on the readmission application to the Associate Dean. The College is not obligated to reconsider an application for readmission.

If a student has been on academic probation, has withdrawn from all classes and desires to return to the College of Pharmacy, his/her application for readmission is referred to the Office of the Associate Dean. The Associate Dean's office will advise the student of the procedure described above, which may be required for his/her readmission. If the Associate Dean approves the recommendations of the committee for readmission, such student will be readmitted and is on probation.

Standards of Professional and Ethical Behavior

One of the goals of the College of Pharmacy is to assist students make the transition into professional life. The Arnold & Marie Schwartz College of Pharmacy and Health Sciences has an obligation to evaluate students as thoroughly as possible for their cognitive abilities, their academic and professional knowledge and skills, and to prepare them for the practice of pharmacy. A pharmacy student shall be of good moral character and recognize a responsibility to participate in activities contributing to an improved community. Pharmacy students caring for patients must not be harmful, dangerous or negligent to the welfare of the patient. Students must adhere to the rules and regulations of the College of Pharmacy, the University, the

clerkship sites and professional organizations. Therefore, standards of professional and ethical behavior have been developed as a guide for students to prepare them to meet the standards of the profession of pharmacy.

A. Professional Integrity

1. Honesty

A pharmacy student shall deal honestly with people including, but not limited to, colleagues, faculty, representatives of the University, patients and health-care providers. Pharmacy students are expected to demonstrate honesty and integrity in all aspects of their interactions.

Examples of academic dishonesty include, but are not limited to, the following:

a. Cheating

- 1) Use of unauthorized assistance during quizzes, tests or examinations
- 2) Dependence upon the aid of unauthorized sources in writing papers, solving problems or completing other assignments
- 3) Acquisition or possession, without permission, of examinations or other academic material belonging to a member of the University faculty or staff
- 4) Falsification of signatures, transcripts, grade reports, attendance records or other official documents
- 5) Provision of false information regarding a missed examination or assignment
- 6) Provision of assistance to others who are participating in the behaviors or activities mentioned above

b. Plagiarism/Copyright Infringement

- 1) Use by paraphrase or direct quotation of the work of another person(s) without fully and properly crediting the author(s) with footnotes, citations or bibliographical reference
- 2) Use of materials prepared in collaboration with others without release in writing from the collaborators
- 3) Reproduction of copyright material (e.g., textbooks, handouts, examinations) without obtaining written permission from the copyright owner

c. Academic Dishonesty Related to Clinical Practice

- 1) Falsification of a patient's medical records or providing fabricated information regarding a patient's medical status

2. Representation

A pharmacy student shall accurately represent himself/herself to others including, but not limited to, colleagues, faculty and staff of the University, patients, preceptors and other health-care providers. For example, according to New York State law, pharmacy students cannot represent themselves as pharmacists.

3. Responsibility

Pharmacy students must not be harmful, dangerous or negligent to the mental or physical health of a patient or the public. Students must be familiar with and follow the rules and regulations of their assigned clerkship/extenship sites, as well as federal, state and local laws pertaining to the practice of pharmacy.

B. Professional Behavior

1. Demeanor

The pharmacy student is expected to be thoughtful and professional when interacting with faculty, patients and their families, attending physicians, preceptors, other students and other members of the health-care team. Inappropriate behavior includes, but is not limited to, use of offensive language or gestures and intimidation or coercion of fellow students, faculty, staff and patients.

Members of the College of Pharmacy community are expected to comply with College policies regarding food and drink in the classroom or clinical setting. Smoking is not permitted in any part of the College of Pharmacy's indoor facilities. Students will not deface school property.

2. Appearance

Students shall maintain a neat, clean appearance and dress in attire that is considered professional.

3. Professional Activities

Pharmacy students should take an active role in professional activities, such as membership in professional organizations.

4. Impairment

The pharmacy student will not use alcohol or drugs in ways that impair his/her ability to perform the work required or result in compromised patient care.

Pharmacy students should protect the public from an impaired colleague and assist an impaired colleague receive appropriate help with his/her drug or alcohol problem.

In addition to the conduct detailed in this document, a pharmacy student must behave in accordance with the student responsibilities detailed in the Long Island University, Brooklyn Campus Student Handbook. Further, students are

subject to the disciplinary procedures as described in the Long Island University Student Handbook. Finally, students must abide by the Arnold & Marie Schwartz College of Pharmacy and Health Sciences guidelines for general department as detailed in the current Student Handbook.

Violations of Standards of Professional and Ethical Behavior and Academic Integrity

Students accused of violating the College's standards of professional and ethical behavior and academic integrity are subject, upon admission of the same, to disciplinary action. Disciplinary actions may include suspension or dismissal from the College of Pharmacy or specific forms of remediation, such as completion of a course on ethics, service requirements to the College or other not-for-profit or charitable organizations or agencies as the College may specify. In cases where the student denies the accusations a Disciplinary Committee consisting of members of the faculty and student representation will be convened to hear the accusations and hear defense on the part of the student. All parties involved may request the presence of other individuals with knowledge pertinent to the case to present evidence. The Disciplinary Committee will present its finding of fact and recommendations as to the disposition of the case to the Associate Dean. Students are advised that they may request the presence of counsel for said hearings only for purposes of observation and advisement. Counsel is not afforded the opportunity to question those appearing before the Committee or to advocate on behalf of the student. Decisions of the Disciplinary Committee and/or the Associate Dean that the student believes may demonstrate arbitrary and capricious treatment or to be fundamentally unfair may be appealed, as a final step, to the Dean of the College of Pharmacy.

Grievance and Disciplinary Procedure

Students at the Brooklyn Campus may expect a scrupulous regard for their rights

as students and individuals and should expect to be treated fairly and with courtesy by all members of the academic community. In any matter in which students feel that their rights have been violated, or in matters of serious dispute with members of the administration or faculty, students may avail themselves of the following formal grievance procedure:

1. The student will write out a clear statement of the grievance.
2. The student may submit this statement to the staff member involved. The student will be given a written response within a reasonable time.
3. If the student is not satisfied with the response, or initially, if preferred, the student may submit a statement to the appropriate division director or department head. The director will review the matter and provide the student with a written response within a reasonable period of time.
4. After a student receives a response from the Division Director, a disciplinary committee may be convened upon the request of the student, the faculty member or the administration. This committee advises the Associate Dean regarding the matter; the Associate Dean's decision is then communicated to the concerned parties. The Dean may initiate disciplinary proceedings upon request of a faculty member or Division Director.
5. If still not satisfied, the student may institute a formal complaint with the Dean of the College in which he or she is enrolled. The Dean will review the matter, hear the student and staff member where appropriate, and see that the proper action is taken.

This procedure shall be a formal grievance procedure for the resolution of all student grievances and disciplinary matters, including those alleging actions prohibited by legislation.

Policy for Student Complaints Relating to Accreditation Council For Pharmacy Education (ACPE) Standards, Policies and Procedures

ACPE is required to demonstrate to the U.S. Secretary of Education its expectations regarding a program's recording and handling of student complaints. In addition, ACPE must demonstrate a link between its review of complaints and its evaluation of a program in the accreditation process. Therefore, ACPE has adopted the following policy: "The colleges and schools of pharmacy have an obligation to

respond to any written complaints by students lodged against the college or school of pharmacy, or the pharmacy program that are related to the standards and the policies and procedures of ACPE. The college or school of pharmacy shall establish, implement and maintain a student complaint procedure that affords the complainant fundamental procedural due process. The college or school of pharmacy should communicate the complaint policy to students. The college or school of pharmacy, or the pharmacy program, shall maintain a file that contains the written complaint, a written record of each step of the complaint procedure and the outcome, except as otherwise prohibited by state or federal law. The files shall be made available for inspection to ACPE at on-site evaluations, or otherwise at ACPE's written request. The findings of this inspection, and the resulting implication(s) to the accreditation of the professional program, shall be noted in the Evaluation Team Report." In order to comply with the ACPE policy regarding student complaints relating to ACPE standards, policies and procedures, the policy of the College of Pharmacy is to provide:

1. Student access to ACPE standards, policies and procedures
2. Communication of complaint policy to students
3. Procedure for student complaints

Student Access, Posting and Communication of Policy

A copy of ACPE standards, policies and procedures and a copy of the College of Pharmacy policy relating to this issue are available in the Office of the Dean. It is available for review by any student enrolled in the College of Pharmacy, but may not be removed from the Office of the Dean.

A copy of ACPE standards, policies and procedures is also available on the ACPE web site, www.acpe-accredit.org. The following shall serve as the notification to students of the complaint policy and the procedure for student complaints.

Complaint Policy and Procedure for Student Complaints

The grievance procedure for students shall require a formal written complaint describing the specific violation of ACPE standards, policies or procedures. The written complaint should include a description of the ACPE standard, policy or procedure in question; grounds for appeal; a summary of the argument; and supporting evidence. This shall be delivered to the office of the

Dean of the College of Pharmacy. Upon receipt of a written complaint, an ACPE Grievance Committee, composed of the Division Directors, Chairs of the Curriculum and Scholastic Committees, the Associate Dean for Academic and Student Affairs and a student representative, shall be convened to review the complaint. A formal, written reply to the student(s) from the Grievance Committee shall include an evaluation of the complaint, a description of any violations, and a proposal for any necessary corrective action. This process shall usually take no longer than 90 days. Decisions of the Grievance Committee that demonstrate arbitrary and capricious treatment or that are fundamentally unfair may be appealed, as a final step, to the Dean of the College of Pharmacy. This process is the sole avenue for student complaints regarding ACPE standards, policies and procedures.

Accreditation Council for Pharmacy Education

A record containing student complaints and written records of the complaint procedure and outcomes shall be maintained in the Office of the Dean of the School of Pharmacy, and shall be available for review by ACPE or its representatives upon written request or in the process of an on-site evaluation visit.

Registration and Counseling

There exists an extensive system for student counseling during the registration periods. These periods normally begin two months before the Summer session (for the Summer and Fall semesters) and two months prior to the Spring semester for that semester.

For most students, registration is a routine process, but schedules must be approved by the Associate Dean's office.

GRADUATION REQUIREMENTS AND AWARDS

Upon recommendation of the faculty and approval by the Board of Trustees, the Doctor of Pharmacy is conferred by Long Island University upon a candidate who has met the following requirements:

1. Satisfactory completion of the full prescribed curriculum (203 credits) or two

or more years in this College and the required equivalent courses in some other registered and accredited college of pharmacy, or departments of a university.

2. Maintenance of a 2.00 or "C" cumulative grade-point average (GPA) in all preprofessional course work completed and, separately, in the professional courses offered in the years P-3 through P-6.
3. Satisfactory demonstration of computer competency.
4. Satisfactory completion of the minimum requirements of the Writing Across the Curriculum program or equivalent course work as defined by the College
5. Settlement of all accounts with the University, including the graduation fee.
6. Evidence of good ethical and professional character.

Students have until the time of their graduation to have changes made on their academic records. Once a student has graduated, the academic record cannot be changed retroactively.

Graduation Awards

College Gold Medal

This prize is given to the student having the highest general standing in the third, fourth, fifth and sixth year's work.

College Silver Medal

This prize is awarded to the student having the second highest general standing in the third, fourth, fifth and sixth year's work.

College Bronze Medal

This prize is awarded to the student having the third highest general standing in the third, fourth, fifth and sixth year's work.

Anderson Award

This prize, a medal, is given to the student having the highest standing in Pharmaceutics III and IV.

APhA Academy of Student Pharmacists (APhA-ASP) Mortar and Pestle Professionalism Award *(supported by McNeil Consumer Healthcare)*

The recipient will be an individual who exhibits the ideals of professionalism and excellence in patient care in all aspects of his/her academic pharmacy career; has demonstrated exceptional service and commitment to the profession of pharmacy through involvement in professional

organizations and other extracurricular learning opportunities; is a graduating senior in an entry-level degree program; and is in good academic standing.

APhA-ASP Senior Recognition Certificate

The American Pharmacists Association honors a graduating student member who has made the greatest contribution to his or her APhA-ASP chapter, with a Senior Recognition Certificate.

Pola and John Bradman Award in Leadership and Service

A prize of \$200 is awarded to a graduating student who has excelled in service and leadership by playing an active role on behalf of the student body, and who has maintained an index of 2.75 or better.

Facts and Comparisons Award of Excellence in Clinical Communication

Recognizes high academic achievement and outstanding clinical communication skills. The award is a compilation of current editions of Drug Interactions Facts, Drug Facts and Comparisons, Guide to Popular Natural Products, American Drug Index, Pocket ImmunoFacts and a set of marble bookends.

Irwin and Lenore Gerson Award

A prize of \$500 is given to a sixth-year student for qualities of leadership and excellence in pharmacist/patient communication.

Jacob J. Goldberg Memorial Award

Through the generosity of Arthur I. Goldberg '53, a prize of \$250 is given to the student showing the highest proficiency in Pharmaceutical Law.

Seymour Katz Memorial Award

Presented to the editor of the College Yearbook. Established by The Royal Counties of New York Society of Hospital Pharmacists, in memory of Seymour Katz, FASHP, M.S.'74, the award consists of a prize of \$500, a plaque, and a one-year membership in the New York State Council of Health-system Pharmacists.

Professor Shirley Kraus Research Award

A certificate is presented at commencement to an entry-level Doctor of Pharmacy degree candidate who has conducted a research project under the

supervision of a faculty member in the Division of Pharmaceutical Sciences. Funds are provided to support the research endeavor.

Lilly Achievement Award

A medallion award and the most recent edition of the USP DI Reference Book are given for superior scholastic and professional achievement, and qualities of leadership.

Membership in the Pharmacists Society of the State of New York

Membership for five years is awarded to a student who is an active member of student PSSNY, has demonstrated an active interest in the profession, has displayed capacity for leadership in the profession, and has a record for public service.

Merck Award

The Merck Manual and the Merck Index are awarded to outstanding students in pharmacy studies. The first award goes to the student who has attained the highest scholastic standing in Medical Physiology, Pathophysiology, and Biochemical Foundations of Therapeutics; the second award to the student who has attained the highest scholastic standing in Pharmacology and Medicinal Chemistry; the third award to the student who has attained the highest scholastic standing in Medical Microbiology/ Immunology; and the fourth award to the student who has attained the highest scholastic standing in Iatrogenic Diseases.

Mylan Pharmaceuticals Excellence in Pharmacy Award

A choice of awards is available: the College chooses either a \$500 Series EE U.S. Savings Bond, or a copy of Drug Interactions Facts, given to the student in the top 25 percent of his/her class academically, has demonstrated high professional motivation and the intent to enter practice upon graduation. A student demonstrating superior proficiency in the provision of drug information services may be given special consideration, providing all other award criteria are met.

Natural Medicines Comprehensive Database Recognition Award

Presented to a graduating student who has exhibited an interest in the use of natural medicines, and whose academic and/or extracurricular activities demonstrate that the student exhibits outstanding promise in the assessment, evaluation, or delivery of patient care related to the use of natural medicines.

The recipient will receive a printed copy of the Natural Medicines Comprehensive Database, plus a subscription to Natural Medicines Continuing Education Series, and an award certificate.

New York City Society of Health-system Pharmacists Student Award

An inscribed plaque, a one-year complimentary membership to the New York State Council of Health-system Pharmacists and the New York City Society of Health-system Pharmacists, and two tickets to the New York City Society of Health-system Pharmacists' Annual Dinner Dance in June, are awarded to the student who exhibits excellence at the institution (hospital) site.

Perrigo Award

A plaque and \$200 are given to a graduating student who has shown excellence in Self Care.

Roche Pharmacy Communications Award

This award was established to recognize and promote effective pharmacist/patient communication as a vital aspect of pharmacists' service to their patients and the community. The award consists of a plaque given to a graduating student who demonstrates this ability.

Glaxo SmithKline Patient Care Award

This award honors a student's superior performance in providing pharmaceutical care and the student's ability to translate clinical knowledge into practical patient care. The award focuses on patient relations in both hospital and community practice. The student selected will receive a personalized certificate and four free books of his or her choice from a brochure provided by A.Ph.A., which features a number of valuable reference books for pharmacy students.

Edward Stempel Pharmacy Award

An award of \$500 is presented each year to a sixth-year student who has demonstrated superior academic achievement in Pharmaceutics I, III, and IV.

Steven Strauss Pharmacy Law Award

An award of \$500 is presented to a graduating student who has demonstrated superior academic achievement in pharmacy law courses, who exemplifies the highest principles of moral and ethical conduct, and who has played a leadership role among students.

TEVA Pharmaceuticals USA Student Award

A personalized plaque and \$200 are awarded to a graduating student who excels in the study of pharmacy.

The United States Public Health Service Excellence In Public Health Pharmacy Practice Award

A mounted certificate signed by the Chief Pharmacist of the U.S. Public Health Service is awarded to the student who has shown excellence in educational and community-based programs to advance the goals stated in "Healthy People 2010".

Lillian C. Zupko Memorial Award

An award of \$100 is given to the student most proficient in Pharmaceutics V by the BCP Woman's Club of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences.

Faculty Council Award

A plaque and \$250 are given to a graduating student based on academic performance and professional motivation.

Degrees with Distinction

Students who have completed at least 60 percent of their credits in residence at the College and have achieved a grade-point average of 3.50, 3.70, or 3.80 may receive, upon a majority vote of the faculty, a Doctor of Pharmacy degree cum laude, magna cum laude, or summa cum laude, respectively.

State Board Examinations

Holders of the Pharm.D. degree who have fulfilled all scholastic requirements may sit for state board of pharmacy licensing examinations. These examinations are offered twice each year in New York State.

Members of the College faculty are thoroughly acquainted with state board regulations concerning internship and licensure requirements. These faculty members regularly make such information available to students and offer guidance in these matters.

PROFESSIONAL PROGRAM TUITION AND FEES

Special Note: Fee schedules below are the prevailing rates for the 2006-2007 academic year. Rates for 2007-2008 will be announced on or about June 1, 2007.

Tuition, per credit (years 1, 2)	\$790.00
Tuition, per credit (years 3, 4, 5, and 6)	859.00
Tuition, per semester, 12-18 credits (years 1, 2)	11,685.00
Tuition, per semester, 12-18 credits (years 3, 4, 5, 6)	13,276.00
Application fee (nonrefundable)	30.00
Deposit fee (nonrefundable) (years 1 and 2)	100.00
(year 3)	500.00
International students (year 1)	250.00
Deposit fee for Residence Hall (nonrefundable)	150.00
University fee, per semester (\$15.00 nonrefundable)	
Program of 12 or more credits	500.00
Program of 4.1 to 11.9 credits	220.00
Program of 4 credits or less	105.00
Professional fee, per semester**	35.00
Student malpractice insurance fee, per semester	
(third, fourth, fifth and six years only)	12.00
Student Activity fee, per semester	
Program of 12 or more credits	65.00
Program of 4.1 to 11.9 credits	55.00
Program of 4 credits or less	No Fee
Flex Dollar Program (students initially registered for	
9 or more credits. Subsequent program changes do	
not cancel the membership, if the registration falls	
below 9 credits.)	35.00
Orientation fee (entering students and transfers only)	35.00
Residence Hall room, per semester,	
per student	2,010.00-4,000.00
Suite, per semester, per student	2,900.00-4,100.00
Apartment, per semester, per student	3,540.00-5,300.00
Meal Plan, per semester	935.00-1,690.00
Required of all resident students occupying a Residence Hall	
room. Students must opt for any one of four available plans.	
Optional for resident students occupying an apartment.	
Health insurance (compulsory for domestic resident students,	
all international students, and students assigned field work	
in a health core curriculum). Charges are billed for an	
annual plan in the Fall semester, covering the policy	
period 8/15/06-8/15/07. Charges are not reduced if a	
student does not reside in the Residence Hall for the	
Spring semester or is no longer in a health core curriculum,	
since coverage continues to be effective over the full policy	
period.	
Rates for the Annual Plan:	
International students	1,255.00
Domestic students	700.00
Health core curriculum students	450.00
Rates for the Spring semester (newly enrolled students)	
covers the policy period 1/1/07-8/15/07:	
International students	779.00
Domestic students	435.00
Health core curriculum students	281.00
Rates for the Summer Semester, covers the policy period	
5/15/07-8/15/07:	
International students	321.00
Domestic students	180.00
Health core curriculum students	117.00

Laboratory fees per course per semester. See Special Fees.

Point credit but no financial credit will be given to those students with course credit from other institutions and who will be taking fewer hours of study than provided for in the regular programs.

Students taking more than the scheduled number of credits (12 to 18) will be charged an additional fee of \$790.00 or \$859.00 per credit for the number of credits in excess of 18 credits. Students may be given permission to take electives at other institutions at their own expense.

Audit fee (half tuition and full fees) (years 1, 2)\$395.00
(years 3, 4, 5, and 6)429.50

CONTINGENCY FEES

Special examinations (each) (Maximum \$60.00)\$20.00
College transcript

A fee of \$5.00 is charged for each transcript up to ten and \$1.00 each for the eleventh and further transcripts issued at the same time.

Late registration.....10.00

Program change15.00

Late Payment Fees

 first late payment fee50.00***

 second late payment fee50.00***

I.D. cards (first card free)10.00

Reinstatement fee100.00

Late graduation application.....25.00

Delayed registration fee200.00

Returned Check Fee

 \$100.00 or less25.00

 More than \$100.0050.00

(Repayment of returned checks and all future payments to the University from a student who has presented a bad check must be tendered via a bank check, certified check, money order or MasterCard, Visa or Discover Card.)

Students failing to fulfill all non-academic requirements (tuition, fees, library obligations, etc.) will be denied subsequent services, including but not limited to withholding of diplomas, transcripts, letters of certification, or licensure eligibility until these requirements are met.

**Sixth-year pharmacy students will pay the flat rate (tuition and fees) if registered for 12 or more credits during the summer sessions.*

***Includes annual student membership dues in the student's choice of one of several professional organizations. Students will indicate by means of a voucher their choice of organization. Vouchers are distributed during the fall semester.*

****Students are expected to clear their bills before the start of classes. In the event that a student fails to do so, late payment fees will be assessed. Registered students who have not cleared the Bursar by the due date indicated on the bill will be obliged to pay the late payment fee of \$50.00. Bills not cleared by mid-point of semester will be assessed an additional late fee of \$50.00. If a student's registration is cancelled, the student will be obliged to pay a reinstatement fee of \$100.00 plus the late payment fees. If the reinstatement takes place one year or more after the semester has ended, current tuition rates will be charged. Any student who deliberately fails to register, but attends classes with the intention of registering late in the term, will be responsible for paying the delayed registration fee of \$200.00. If the registration takes place one year or more after the semester has ended, current tuition rates will be charged.*

Time and Method of Payment

All fees and the entire tuition for each semester are due and payable in full at the time of registration. All payments must be made either by check or money order drawn in favor of Long Island University, or by VISA, MasterCard, Discover Card or Diner's Club.

The College reserves the right to change the fees herein stated at any time without notice.

Withdrawal

A student who wishes to withdraw from the College should follow directions outlined in the withdrawal form obtained from the Registrar (Refer to Withdrawal Policies in Administrative Regulations). Drops or withdrawals will not be permitted after the date published by the Registrar in the Academic Calendar. No certificate or transcript of record will be granted, however, until all financial indebtedness is settled. When a student withdraws, the University will refund tuition and fees as indicated in the following schedule.

Long Island University Institutional Refund Schedule

<i>Time of Withdrawal</i>	<i>Fall/Spring Semester</i>	<i>Summer 5-6 Week Session</i>
Cancellation prior to beginning of semester or session	Complete refund except for deposit and applicable registration fee.	
Cancellation after beginning of semester or session	No refund of Dining Club fee.	
During:		
1st calendar week	90%	60%
2nd calendar week	75%	25%
3rd calendar week	50%	No refund
4th calendar week	25%	
After 4th week	No refund	
<i>Time of Withdrawal</i>	<i>7-8 Week Session</i>	<i>10-Week Session</i>
Cancellation prior to beginning of semester or session	Complete refund except for deposit and applicable registration fee.	

During:		
1st calendar week	70%	80%
2nd calendar week	30%	60%
3rd calendar week	No refund	25%
4th calendar week		No refund

<i>Time of Withdrawal</i>	<i>3-Week Session</i>
Cancellation prior to beginning of session	Complete refund except for deposit and applicable registration fee.

During:	
1st calendar week	60%
2nd calendar week	No refund

<i>Time of Withdrawal</i>	<i>Weekend College</i>
Cancellation prior to beginning of semester or session	Complete refund except for deposit and applicable registration fee.

Prior to:	
2nd weekend	70%
3rd weekend	30%
Following 3rd weekend	No refund

<i>Time of Withdrawal</i>	<i>Short-Term Institutes (3 weeks or less)</i>
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Cancellation prior to first class	Complete refund except for deposit and applicable registration fee.
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Up to mid-point of first class	80%
Following mid-point of first class	No refund

<i>Time of Withdrawal</i>	<i>Continuing Studies</i>
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Cancellation prior to beginning of first class	Complete refund except for deposit and applicable registration fee.
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Prior to start of second class	80%
After second class	No refund

SCHOLARSHIPS AND FINANCIAL AID

Financial Assistance

All candidates for Long Island University scholarships or grants, for federal grant programs, work study opportunities, or educational loans, and for New York State's Tuition Assistance Program (TAP) awards, must complete the Free Application for Federal Student Aid (FAFSA) every year. This application is available over the Internet at www.fafsa.ed.gov or from the Homepage of the Office of Student Financial Services at L.I.U.'s website at www.brooklyn.liu.edu/financialaid. Also available at this site is information on the scholarships and grants and other forms of financial assistance available for attendance at Long Island University.

An applicant for financial aid may expect to receive a financial aid award notice shortly after the University has received his/her completed electronic FAFSA information. No action will be taken until the candidate has been accepted by the Admissions Office.

Since the Pharm. D. Program is six years in length, there are special considerations for financial aid funding that are outlined by the federal government for the undergraduate component of the program vs. the graduate component. Federal financial aid programs such as the Federal Pell Grant Program, and the Federal SEOG Grant Program, are limited to the first four years of undergraduate study. Federal loan amounts also differ for the undergraduate years vs. the graduate years. New York State's TAP award for undergraduate students is available for up to eight semesters of full-time undergraduate study. Graduate TAP awards are available for up to four semesters of full-time study.

University Scholarships

Long Island University offers a wide variety of scholarship and grant programs. Most of these funds are awarded at the time of a student's admission to the University, and provide assistance for tuition charged (required on- or off-campus fees are not included). Based on academic achievement (high school averages,

SAT scores,) and/or talent and skills, these L.I.U.-funded scholarships are awarded by the University's Undergraduate Scholarship Committee. The total number of scholarships and grants offered each year by the University is dependent upon the availability of funds. The University reserves the right to change its scholarship and grant policies accordingly.

Detailed descriptions of the undergraduate scholarship and grant programs also appear in the "A Guide for Academic Scholarships and Grants" on the Office of Student Financial Services' Homepage (click on "Brochures, Forms & Other Links," then on "Brochures"). Long Island University offers its undergraduate scholarship and grant programs for the first four undergraduate years of the Pharm. D. program. For the graduate phase of the program, recipients of particular undergraduate scholarship awards may become eligible for the Graduate Excellence Award, if they attained a cumulative average of at least a 3.5 as they enter graduate status. The undergraduate awards include the University Scholars Award, the Dean's Scholarship, the Presidential Scholarship, the Provost's Excellence Award, the Academic Incentive Award, the Continuing Student Scholar's Award, and the MLK/Jose Marti Award. The Graduate Excellence Award provides \$2,000 per year for the remaining two graduate years.

Academic Scholarships

University Scholars Awards

Entering freshmen who have earned at least a 92 high school average, and 1300 combined critical reading and math SAT scores, are eligible for this scholarship, which provides up to \$10,000 per year towards tuition after TAP and Federal Pell Grant funding. Entering transfer students who earned an Associate Degree from select community colleges, who earned at least a 3.75 cumulative average, also qualify for this award.

Presidential Scholarships

Entering freshmen who have earned a minimum 88 high school average and 1200 combined critical reading and math SAT scores, are eligible for this scholarship which provides \$7,500 per year towards tuition. Entering transfer students who earned at least a 3.75 cumulative average and have at least 48 transferable credits accepted by Long Island University are also eligible for this award. Awards for transfer pharmacy

majors are limited to 50 each year.

Distinguished Scholars Awards

Recipients of the University Scholars Awards or the Presidential Scholarships may apply for this award, which requires a minimum registration of 16 credits per term, with no less than 12 in the Core Curriculum. This award provides \$500 for 16 credits, \$1,000 for 17 credits, and 1,500 for 18 or more credits.

Provost's Excellence Awards

Entering freshmen who have earned a minimum 90 high school average are eligible for this scholarship which provides \$4,000 per year towards tuition. Entering transfer students who earned at least a 3.50 cumulative average and have at least 48 transferable credits accepted by Long Island University are also eligible for this award.

Martin Luther King Jr./Jose Marti Awards

This program is an admission and financial assistance package based on academic merit and financial need. The program, which is available to a limited number of students each year, provides \$5,000 per year towards tuition. Students must be eligible for TAP and Federal Pell Grant funding. Entering freshmen who have earned at least an 85 high school average and 1000 combined critical reading and math SAT scores are eligible to apply. A written essay and interview are a required part of the selection process. A limited number of awards are available for entering transfer students who earned at least a minimum 3.0 cumulative average. This program also provides a book voucher of \$150.00 each semester.

Academic Incentive Awards

Entering freshmen who have earned a minimum 86 high school average are eligible for this award which provides \$2,000 per year towards tuition. Entering transfer students who have earned a minimum 3.3 cumulative average and have at least 32 transferable credits accepted by Long Island University may apply for this award.

Continuing Student Scholars Awards

This competitive award requires a minimum 3.6 cumulative average for students who have completed 30 or more credits at Long Island University without proficiency courses or incompletes. This award provides \$4,000 per year towards tuition. This award is not available to recipients of University Scholars Awards, Dean's Scholarships, Presidential Scholarships, Provost's Excellence Awards, MLK/Jose Marti Awards, or full athletic awards.

Campus Activity Program Cheerleader, and Pep Band Awards

The Campus Activity Program Award provides \$2,500 per term and requires the recommendation of a faculty member, an administrator, or the Scholarship Committee. There is a service component to this award that requires that recipients who are assigned to a department within the University work up to 15 hours per week.

The Cheerleader Awards provide \$3,000 per term and the Pep Band Awards provide \$1,500 per term. Both require a service component.

Graduate Excellence Award

Available for the graduate phase of the Pharm. D. Program, this award may be received by students who had specific scholarships during their undergraduate years, such as the University Scholars Award, the Dean's Scholarship, the Presidential Scholarship, the Provost's Excellence Award, the Continuing Student Scholars Award, the MLK/Jose Marti Award, or the Academic Incentive Award. A minimum cumulative average of 3.5 is required. This award provides \$2,000 annually, and is available for the last two graduate years of the Pharm. D. program.

Dean's Awards

This award is available to students in the undergraduate phase of the program, who are enrolled for and successfully complete 15 credits or more in a semester, and achieve a cumulative index of 3.70 or higher for that semester (with no W, WF, UW, INC, or ABS grades). Awards are available for the semester directly following the earning of the average and provide funding for credits taken over 15. For students enrolled for 16 or 17 credits, the award is \$1,000. For enrollment of 18 credits or more, the award is \$1,200. Awards may not be transferred to any subsequent terms. Students must request this award from the academic Dean.

Dean's Scholarships

Students who received the Dean's Award for six consecutive semesters in the undergraduate phase of the program are eligible for this scholarship which provides up to \$10,000 towards tuition after TAP and Federal Pell Grant funding. This award is available only during the undergraduate phase of the program.

L.I.U. Grants

This award is available to first-time college freshmen demonstrating financial need, who do not qualify for any academic award at the time of their admission to the University. This award pro-

vides \$1,000 per year.

Pharmacy Alumni Awards

Students who are recommended for admission by alumni are eligible to apply for this award which provides \$1,000 annually towards tuition. An Alumni Voucher must be submitted before the Admissions Office receives a student's Application for Admission. Further information concerning University assistance is available from the Office of Student Financial Services.

Pharmacy Scholarships

In addition to University Scholarships noted above, there are many scholarships available specifically for pharmacy students. These scholarships have been funded through the generosity of alumni and friends of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences. Awards are based on academic achievement and professional promise, as well as financial need. Applications are available from the Office of the Associate Dean for Academic and Student Affairs.

Annual Scholarships

Berl S. Alstodt Scholarship

Established by Harvey Reisman '43, through the H. Reisman Charitable Trust, a \$1,000 scholarship, in memory of Professor Berl S. Alstodt, will be awarded to a student in years P-3 through P-6, on the basis of academic promise and financial need.

Baird Family Scholarships

Established by the Baird Family Fund in memory of Winfield Baird, a number of \$1,000 scholarships are awarded to students in years P-3 through P-6 who demonstrate financial need.

Baker/Perchuk Thriftway Pharmacy Scholarship

Established by Robert Baker '81 and Alex Perchuk '87 of Thriftway Services Corporation, two \$1,500 scholarships are awarded annually, on the basis of financial need and academic ability, to students in years P-4 through P-6 who have a demonstrated interest in the entrepreneurial aspects of community pharmacy.

Josué Bruno Memorial Scholarship

Established by Edith Bruno '76, in memory of her husband, a \$1,000 schol-

arship will be awarded to a student of Haitian-American descent in years P-3 through P-6 on the basis of financial need, academic promise, and interest in community pharmacy.

Josué Bruno Scholarship

Established by Vanessa Bruno '02 in memory of her father, \$1,000 scholarship will be awarded to an African-American student in years P-3 to P-6 on the basis of financial need and academic promise.

Patrick J. Campbell Scholarship

Established by Boris Natenzon '99 and Angela Bursuker Natenzon '98, a \$1,000 scholarship is named for Patrick J. Campbell, Director of Student & Professional Activities for the College of Pharmacy, and awarded to a pharmacy student who has established an exemplary record of service to fellow students and to the College of Pharmacy.

Gary M. Cohen Scholarship

Established by Gary M. Cohen '81, CEO of Synergy Medical Communications, Inc., a \$1,000 scholarship is awarded annually to a student in years P-3 through P-6 on the basis of financial need and academic promise.

Graduating Class Scholarship

The graduating class traditionally raises \$1,000 to award to an outstanding student who has demonstrated leadership and service to the College of Pharmacy.

Herbert and Adrian Conrad Pharmacy Scholarships

Funded by Herbert Conrad '54, H'91, a member of the College's Council of Overseers, a number of \$3,000 scholarships will be awarded annually to students with a demonstrated interest in pursuing a career in the pharmaceutical and related industries.

CVS Scholarships*

Funded by CVS Pharmacies, Melville Corporation, five \$1,000 scholarships are awarded each year.

Ronald Del Gaudio '79 Scholarships

Established by Ronald Del Gaudio '79, President of Kings Super Pharmacy, two \$5,000 scholarships will be awarded to P-3 – P-6 students who have demonstrated outstanding communication skills in the service of the profession.

Robert and Susan DiGregorio '96 Scholarship

Established by Professor Robert DiGregorio and Susan DiGregorio a \$1,000 scholarship will be awarded to a P-5 or P-6

student with a "B+" or better average, who demonstrates leadership skills through active community service or participation in professional organizations. Candidates who hold elected office in such organizations will be given preference.

Arthur I. Goldberg, Esq./Jacobson, Goldberg and Kulb, LLP Scholarship

Established by Arthur I. Goldberg '53, member of the Pharmacy Council of Overseers, and Trustee Emeritus, a \$1,000 scholarship is awarded annually to a student in years P-3 through P-6 on the basis of financial need and academic promise.

Greenberg Family and Madison Fund Scholarship

Established by Frederic Greenberg '61, Distinguished Alumni Award Recipient, 1987, and Cynthia Madison, this scholarship in the amount of \$1,000 is awarded to a student in years P-3 through P-6 on the basis of financial need and academic ability.

Hana Pharmacy Scholarship

Established by Myeongha (Peter) Jo '97, a \$1,000 scholarship is awarded to a student of Korean descent on the basis of academic achievement and financial need.

Healthcare Marketing and Communications Council Irwin Gerson Scholarship

A \$2,500 scholarship is provided by the Healthcare Marketing Council, in the name of Irwin C. Gerson, to a student who has a demonstrated interest in pharmaceutical marketing or advertising.

John P. Hengartner Scholarship

Established by Liesel B. Schumacher, Assistant Dean, Arnold and Marie Schwartz College of Pharmacy, in memory of her uncle, a \$1,000 scholarship is awarded to a pharmacy student in the Honors Program.

Indo-American Pharmaceutical Society Scholarships

A \$1,000 scholarship is awarded to a P-4 student of Indian heritage from either parent. Student must be a member of the Society, must have a general knowledge of India as a country and its heritage, and also be involved in socio-professional organizations.

A second \$1,000 scholarship to be given to an American student was instituted in 1995.

Jerome L. Justman Scholarship

Established by the family of Jerome L. Justman '57, a \$1,000 scholarship will be awarded to one student (P-3 through P-

6), who has a demonstrated commitment to the community, has a financial need and meets the high standard of academic accomplishment as set forth by the Arnold & Marie Schwartz College of Pharmacy and Health Sciences.

Henry Kaplan Scholarship

Established by Henry Kaplan '55, M.S. '73, a \$1,000 scholarship is awarded to a P-3 through P-6 student on the basis of financial need. The recipient should demonstrate broad career goals and have an interest in photography.

Korean-American Pharmaceutical Association Scholarship

Two \$1,000 scholarships are provided by the Korean-American Pharmaceutical Association to students in P-3 through P-6, on the basis of financial need and academic achievement.

Linden Pharmacy Scholarship

Established by Fred Wein '76, Steven Rosenstein '79, and Eugene Friedman '76, \$1,000 is awarded annually to a student in years P-3 through P-6 on the basis of financial need and academic promise.

Maimonides Scholarship Program

Maimonides Medical Center provides scholarship support to students interested in pursuing a career in hospital pharmacy. Priority is given to students who reside near the Maimonides Medical Center. Recipients are given part-time work opportunities, and upon graduation are expected to practice as pharmacists at Maimonides for a set period of time.

Boris and Angela Natenzon Scholarship

Established by Boris Natenzon '99 and Angela Bursuker Natenzon '98, a \$1,000 scholarship is awarded to a pharmacy student in years P-3 through P-6 on the basis of financial need and academic promise, preferably of Russian Jewish heritage.

Irina & Olga Pikovskaya Scholarship

Established by Irina Pikovskaya '00, Pharm.D. '01, a scholarship will be awarded to a student in year P-3. Preference will be given to applicants who are single women, fluent in an Eastern European language, with a dependent child or children.

Rite Aid Scholarships*

Funded by the Rite Aid Corporation, a number of \$1,000 scholarships are awarded to students who are Rite Aid pharmacy interns and who have excellent communication and leadership skills.

Sheila Rosenberg Memorial Scholarship

Established by friends and colleagues of Professor Jack M. Rosenberg, a \$1,000 scholarship is awarded each year to a student in years P-3 through P-6, on the basis of financial need and academic achievement.

Ross Communications Associates, Inc. Scholarship

Established by Robert M. Ross, a member of the College's Council of Overseers, a \$2,000 scholarship is awarded annually to a student in years P-3 through P-6, on the basis of financial need and academic achievement.

Richard Schirripa Madison Avenue Pharmacy Scholarship

Established by Richard Schirripa '79, owner of Madison Avenue Pharmacy, an annual \$1,000 scholarship will be awarded to a student (P-3 through P-6) on the basis of financial need, good academic standing, and an interest in community pharmacy.

Liesel B. Schumacher Academic & Leadership Excellence Scholarship

A \$1,000 scholarship award is given to a student in years P-4 through P-6 who has displayed outstanding qualities of leadership success in extracurricular activities and excellence in scholarship with an average of 3.5 or higher. Established by Sophia Lai '05 and Brian Yeung '04 in honor of Liesel B. Schumacher, Assistant Dean for Administration and valedictorian of the LIU Class of 1997, for her tireless and exemplary service on behalf of students at the College of Pharmacy.

Schuss Scholarships*

Funded through the efforts of the Bellco Drug Company, scholarships of up to \$1,000 are awarded to students in years P-3, P-4, P-5 or P-6, based on academic promise and financial need.

Arnold Schwartz Memorial Scholarships

Established by Mrs. Arnold Schwartz, in memory of her late husband and benefactor of the College, a number of \$1,000 scholarships are awarded to students in years P-3 through P-6 who demonstrate financial need.

Arnold Schwartz Memorial Workshops

Several workshops, presented by Mrs. Arnold Schwartz in memory of her late husband, are awarded to students in the

professional pharmacy program who are actively assisting members of the administration or faculty in research projects or other useful assignments in order to enhance their academic development.

Staten Island Medical Center Scholarships

Staten Island Medical Center provides scholarship support to students interested in pursuing a career in hospital pharmacy. Priority is given to students who reside near the Staten Island Medical Center. Recipients are given part-time work opportunities, and upon graduation are expected to practice as pharmacists at Staten Island Medical Center for a set period of time.

Howard Stein Memorial Scholarship

Established by Edward M. Frankel '58, President of Windmill Vitamin, in memory of his classmate and partner, this scholarship in the amount of \$1,000 is awarded to a student in years P-3 through P-6, on the basis of financial need and academic ability.

Edward Stempel Scholarship

Established by Professor Emeritus Edward Stempel '49, and continued by his family in his memory, a \$500 scholarship is awarded to a student in years P-3 through P-6, on the basis of financial need and academic ability.

Steven Strauss Scholarship

Funded by Professor Emeritus Steven Strauss '55, a \$500 scholarship is provided to a senior pharmacy student who is completing all academic requirements, but who has significant debt to the University.

Sols Pharmacy Scholarship

Established by Steven J. Kabakoff '69, two \$2,500 scholarships will be awarded to students (P-3 through P-6) on the basis of financial need and academic ability. Efforts will be made to give the award to students of Hispanic origin.

Wal-Mart Scholarship*

Founded by Wal-Mart, a \$1,000 scholarship is awarded to a student with high scholastic standing and strong leadership qualities.

Stella Widenski Award

Awards of \$100 each are presented by the Alumni Association of the College to two students who have completed year P-3, on the basis of financial need and scholarly achievement

* These scholarships are awarded to students in years P-3 through P-6 based upon academic achievement and a demonstrated interest

in pursuing entrepreneurial and management careers in community pharmacy.

Endowed Scholarships

Philip and Lillian Kamenkowitz Scholarships

Established by Philip Kamenkowitz '22, a number of \$500 scholarships are awarded to beginning pharmacy students on the basis of financial need and academic promise. Awards are continued through the course of study if good academic standing is maintained.

Franc H. Largeman Scholarship

Established by Lila Largeman Gable '50 in memory of her parents, a scholarship of approximately \$500 is awarded to a student, P-3 through P-6, on the basis of financial need and academic ability. Franc H. Largeman, Ph.G., was a graduate of Columbia University College of Pharmacy, Class of 1919.

Nellie Jane Macdonald Scholarships

Established by Marie Schwartz in memory of her beloved sister, Nellie Jane Macdonald, scholarships will be awarded to pharmacy students in years P3-P6 on the basis of academic achievement and financial need.

The Marvin Persky Scholarship

Established by the family of Marvin Persky '60, M.S.'70, a scholarship is awarded to a student (P-3 through P-6), who is an immigrant or the child of immigrants to this country and has displayed outstanding qualities of character, including the gift of humor, an appreciation of learning in general, and excellence in scholarship with an average of "B" or higher.

Irving Rubin Scholarship Fund

Established by friends and colleagues of Irving Rubin '36, this fund provides approximately \$4,000 a year in both undergraduate and graduate scholarship support for outstanding students with a demonstrated interest in community pharmacy, wholesale distribution, pharmaceutical marketing, management, sales or journalism.

Henry A. Panasci, Jr. Scholarships

Established by the Henry A. and Faye Panasci Fund, a \$1,000 scholarship is awarded in honor of Mr. Henry A. Panasci, Jr., Chairman of the Board, Faye's Drug Company, Inc.

Seymour Weinstein Memorial Scholarship

Established by the friends of Seymour Weinstein '54, an annual scholarship of \$1,000 is awarded to a student on the basis of financial need and academic achievement. The award will be given to a student who has a demonstrated interest in industrial pharmacy and who best exhibits the qualities of creativity and independent thought as exemplified by Seymour Weinstein.

Florida Alumni Scholarships

Established by the Florida Chapter, Brooklyn College of Pharmacy Alumni Association, these scholarships are awarded annually, in perpetuity, to students who meet the listed criteria. The scholarships are named in honor of individuals who have unselfishly devoted themselves to the betterment of the Arnold & Marie Schwartz College of Pharmacy and Health Sciences.

Berl S. Alstodt Memorial Scholarship

A certificate and \$300 are given to the student having the highest standing in Medicinal Chemistry I and II.

Anne Colin Memorial Scholarship

A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need.

David Colin Scholarship

A \$500 scholarship is given to a student in year P-3, based on academic achievement and financial need.

Philip E. Davis Achievement Award

A \$500 scholarship award is given to a student in year P-4 who has displayed outstanding qualities of leadership, success in extracurricular activities and excellence in scholarship with an average of "B" or higher.

Irwin C. Feder Scholarship

A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need. Stephen M. Gross Scholarship A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need.

Stephen M. Gross Scholarship

A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need.

Alan Katz Scholarship

A \$500 scholarship is given to a student in year P-4, based on scholarship, achievement and financial need.

Constantine Lopilato Scholarship

A \$500 scholarship is given to a student in year P-5, based on academic achievement and financial need.

Howard Maltz Scholarship

A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need.

Marie Schwartz Scholarship

A \$500 scholarship is given to a student in years P-3 through P-6, based on academic achievement and financial need.

Arthur G. Zupko Scholarship

A \$500 scholarship is given to a student in years P-4, P-5 or P-6, with a high scholastic standing and an interest in research. The candidate is further required to participate in a research project with a faculty member.

University Scholars Program

Several endowed scholarships have been established through the generosity of friends of the College and University. The income from these endowment funds is used to support the scholarships and the amount of award may vary.

Alumni Association Executive Board Scholarship

Established through contributions made by members of the Alumni Association Executive Board, and matched by Professor Emeritus Steven Strauss, a scholarship is awarded to a student in years P-3 to P-6 on the basis of academic promise and financial need.

Arnold Consultancy & Technology LLC/Novartis Pharmaceutical Corp. Scholarship

Established through the efforts of Dr. Renée Goldberg Arnold, a member of the College's Council of Overseers, a scholarship is awarded to a student in years P-3 to P-6 who demonstrates academic excellence and overcomes significant hardship.

Edmund I. Axelroad '50 Scholarships

Established through a bequest from the Estate of Edmund I. Axelroad, several scholarships will be awarded to students in years P-3 to P-6 for the benefit of American born students on the basis of financial need.

Louis V. Clemente '24 Scholarships

Established by the Louis and Virginia Clemente Foundation, up to seven scholarships are awarded each year to students years P-3 to P-6. Awards are made to students who have demonstrated the capacity to achieve educational and professional goals and the initiative to seek opportunities to further their progress. Financial need and character are also criteria for the award.

Ronald Del Gaudio '79, Kings Pharmacy Scholarship

Established by Ronald Del Gaudio '79, a scholarship is awarded to a student in P-3 to P-6 on the basis of academic achievement and financial need.

Fuji Photo Film Scholarships

Established by Fuji Photo Film USA, Inc. through the efforts of Mr. Robert Cartwright, Vice President, these scholarships are awarded to students in years P-3 to P-6 on the basis of academic promise and financial need.

Leonard A. Genovese Scholarships

Established in honor of Leonard A. Genovese, Chairman and President of Genovese Drug Stores, Inc., these scholarships are awarded to students in years P-3 to P-6 on the basis of academic promise and financial need.

Irwin and Lenore Gerson Scholarship

Established by Irwin and Lenore Gerson, a scholarship is awarded to a student in years P-3 to P-6 on the basis of academic promise and financial need.

Michael Gleit '74 Scholarship

Established by Sophia and Michael Gleit, a scholarship is awarded to a student in P-3 to P-6 on the basis of academic promise and financial need, and who is committed to the community and a career in independent pharmacy,

Gypsy Memorial Scholarship

Established by Jerome S. Factor '60, a scholarship will be awarded to a pharmacy student in year P-3 – P-6 on the basis of academic promise and financial need.

Robert W. Hannan Scholarships

Established in honor of Robert W. Hannan, Vice Chairman, Eckerd Corporation, two scholarships are awarded to students in years P-3 to P-6 on the basis of academic promise and financial need.

Daniel Kantor'54 Leadership Scholarship

Established by his daughter Heidi, the endowed scholarship will be awarded to a class leader, who like her Dad demonstrates an interest in student government. Daniel Kantor served as president for his freshman, sophomore and junior years and President of the Student Council in his senior year.

Moon Kyung Kim Scholarship

Established by Moon Kyung Kim '77, a scholarship is awarded to a student in year P-3 to P-6 solely on the basis of financial need.

Leon Lachman Scholarship

Established by Dr. Leon Lachman, a member of the College's Council of Overseers, a scholarship will be awarded to a student in year P-5 or P-6, on the basis of financial need.

Eugene and Beverly Luntz Scholarship

Established in 1998 when Eugene Luntz retired as Chair of the University's Board of Trustees. Awarded to a student who has high financial need and high academic standing.

Frank Maddalena Scholarship

Established by Frank Maddalena, M.S. '74, H '97, a member of the College's Council of Overseers, a scholarship is awarded to a pharmacy student in year P-3 to P-6 on the basis of academic promise and financial need.

Harvey and Renee Maldow Scholarship

Established by Harvey Maldow '67, M.S. '72, Distinguished Alumnus Award '96, a scholarship is awarded to a P-5 or P-6 student on the basis of academic achievement, financial need, and leadership in pharmacy organizations.

Medco Health Solutions Scholarship

Established by Medco Health Solutions through the efforts of Frederick D. Klein '52, a scholarship is awarded to a student in years P-3 to P-6 who excels academically but needs financial assistance.

Michael Melnicke Scholarship

Established by Overseer Michael Melnicke, a scholarship is awarded to a student who is majoring in pharmacy or a related health field.

Vera Morella Memorial and Pat and Daphne Daddino Scholarship

Established by Patrick Daddino '70, in memory of his mother, a scholarship is awarded to a P-3 to P-6 student on the basis of academic achievement and financial need.

Thelma Lee Ruffin Scholarship

Established by Craig Ruffin '85, Co-founder and past President of the College's Chapter of the Student National Pharmaceutical Association (SNPhA), and past SNPhA National President, a scholarship will be awarded to a minority student who exhibits leadership potential through active service and who has a financial need. The scholarship has been named to honor his mother, a single parent of two who although she never realized a college education for herself, devoted her life to instilling in her children the importance of academics. Thelma Ruffin made sure her children knew the "Impossible Dream" wasn't so impossible and this scholarship affirms that legacy.

Mohammed Saleh Scholarship

Established by Mohammed Saleh MS'77, a scholarship is awarded to a student in year P-3 to P-6. The award will be made to a student of Asian origin (preferably from Bangladesh) on the basis of academic promise and financial need.

Schein Pharmaceutical, Inc. Scholarship

Established by Schein Pharmaceutical, Inc., through the efforts of Martin Sperber, and supplemented by Michael Fedida, both members of the College's Council of Overseers, a scholarship is awarded to a student in years P-3 to P-6 on the basis of academic achievement and financial need.

Sperber Family Scholarship Fund

Established by the generosity of Martin Sperber, a member of the College's Council of Overseers, and a Trustee of Long Island University, scholarships will be awarded to students in year P-3 through P-6 on the basis of academic achievement and financial need.

Howard Sternheim '54 Memorial Scholarships

Established in memory of Howard Sternheim, by friends and family, scholarships are awarded to students in years

P-3 to P-6 on the basis of academic promise and financial need. Mr. Sternheim was vice chair of the College's Council of Overseers at the time of his death, and was awarded the College's Distinguished Alumni Award in 1998.

Ullman Family Partnership Scholarships

Established by Distinguished Alumni Award recipient, Richard Ullman '67, and his son Kenneth Ullman '99, two scholarships are awarded to pharmacy students in years P-3 - P-6 on the basis of academic promise and financial need.

Federal Assistance – Financial Aid

Candidates for admission will be considered for all types of federal assistance on the basis of information from the Free Application for Federal Student Aid (FAFSA), available over the Internet at www.fafsa.ed.gov.

Applicants for financial aid are expected to apply for Federal Pell Grants, and those who are legal residents of New York State are expected to apply for the Tuition Assistance Program (TAP) award. Applicants for financial aid may expect to be notified of the decision reached by the Office of Student Financial Services shortly after their files have been completed. No action will be taken until the candidate has been accepted by the Office of Admissions. Federal and state financial aid and L.I.U. scholarships and grants designated for undergraduate students are available for the first four years of the undergraduate phase of the Pharm. D program.

Further information on the financial aid and L.I.U. award programs is available at www.brooklyn.liu.edu/financialaid.

Recipients of Title IV financial aid funding must maintain full-time student status to receive the maximum benefits from these programs. Students who withdraw and drop their registration below full-time status must have their current and future aid eligibility redetermined.

Federal Pell Grants

Full-time, three-quarter time and half-time undergraduate students are eligible to apply directly to the federal government for grant assistance, based on financial need. U.S. citizenship or permanent residence status is required. All undergraduate students in need of financial assistance should apply for this grant. This form of assistance is available only for the first four years of the undergraduate phase of the Pharm.D. program.

Federal Supplemental Educational Opportunity Grants (SEOG)

Supplemental grants are available to full-time undergraduate students, exhibiting financial need, who are U.S. citizens or permanent residents, and recipients of Federal Pell Grants. This form of assistance is available only for the first four years of the undergraduate phase of the Pharm.D. program.

Federal Perkins Loan

This loan is based on financial need and is available to full-time students who are U.S. citizens or permanent residents. Loans are repayable six months after graduation or termination of at least part-time studies at an interest rate of 5%. Deferment and/or cancellation benefits are available.

Health Professions Student Loan (HPSL)

This loan is available to full-time students majoring in Pharmacy who are U.S. citizens or permanent residents exhibiting financial need, and who can submit parental income information. Loans range from \$200 to \$4000 annually, and are repayable one year after termination of at least half-time studies or immediately after change of major, at an interest rate of 5%. Average repayment requires a minimum of \$45 per month for a maximum of ten years.

Deferment benefits of up to three years are available for those on Active Duty in a uniformed service (Army, Navy, Marine Corps, Air Force, Coast Guard), the National Oceanic and Atmospheric Administration Corps and the U.S. Public Health Service. Also eligible are volunteers in the Peace Corps.

Deferments are also available for advanced professional training in internship and residency programs, full-time training beyond the first professional degree, or training fellowships by hospitals which are affiliated with health professional schools. Further information is available upon request.

Federal Work-Study/America Reads Programs

Part-time employment is available through the Federal Work Study Program for students exhibiting financial need. U.S. citizenship or permanent resident status is required. The America Reads Program also provides off-campus employment for tutors who meet academic standards and demonstrate financial need.

Academic Standards for Federal Programs

Students receiving Title IV financial aid assistance are required to meet standards of satisfactory progress toward their degree objective. The standards outlined in the chart on p. are in effect for the receipt of Title IV assistance (Federal Pell Grant, Federal SEOG, Federal Perkins Loan, Federal Work Study, and all Federal Direct Student loans).

William D. Ford Federal Direct Student Loan Program

Students enrolled for a minimum of 6 credits who are U.S. citizens or permanent residents may borrow from the Federal Direct Student Loan Program. There are two types of loans offered in this program, subsidized and unsubsidized. Subsidized loans are based on financial need and delays repayment of principle and interest until six months after graduation or termination of at least part-time studies. Unsubsidized loans require payment of interest while the student is in school.

The Federal Direct Loan Program offers loans at a very low variable interest rate (2.82 for 2003-2004), that will not exceed 8.25%. The amounts borrowed each year are linked to the student's academic classification, and there are aggregate loan limits that place a cap on cumulative borrowing for all the years of attendance.

For subsidized loans, the following reflects these annual and cumulative loan limits:

	Annual Loan Limit	Aggregate Loan Limit
Freshmen Year	\$2,625	
Sophomore Year	\$3,500	
Junior and Subsequent Years	\$5,500	
Undergraduate Total		\$23,000
Graduate	\$8,500	
Combined Undergraduate and Graduate Total		\$65,000

Independent students are eligible to borrow from the unsubsidized loan program, with annual and aggregate loan limits as follows:

	Annual Loan Limit	Aggregate Loan Limit
Freshmen and Sophomore Years	\$4,000	
Junior and Subsequent Years	\$5,000	
Undergraduate Total		\$23,000
Graduate and Professional	\$10,000	
Combined Undergraduate and Graduate Total		\$73,000

Unsubsidized loans begin repayment within 60 days after the final disbursement of the loan unless the borrower requests and is granted an in-school deferment. A student may not borrow if the estimated cost of attendance minus financial aid show no need.

Students whose registration drops below part-time (6 credits), become ineligible for any portion of the loans described above, and funds are returned to the federal government. The Office of Student Financial Services, based on information from the FAFSA or Renewal FAFSA, and any documentation requested, determines eligibility for all loans in this program.

Further detailed information is available on these, and all loan programs, in publications available in the Office of Student Financial Services, or on their Web site at www.brooklyn.liu.edu/financialaid.

Federal Direct Plus Loan Program

The parents of dependent undergraduate students may borrow through this loan program. The annual maximum amount a parent can borrow is the difference between the student's cost of education and the amount of financial aid received. There is no aggregate loan limit for this loan. The interest rate is an annual variable rate based on the 52-week T-Bill plus 3.10% (4.86% in 2003-

2004) capped at 9%. Repayment of principle and interest begins within 60 days after the loan is disbursed.

State Assistance

Tuition Assistance Program (TAP)

This is available to full-time undergraduate and graduate students who are U.S. citizens or permanent residents, who have been New York State residents for at least one year. Awards are based on the net taxable New York State income of the previous fiscal year.

All students must declare a major prior to (not during) their junior year. Recipients of TAP funding are subject to regulations governing satisfactory academic progress and program pursuit. The above chart outlines these requirements. Lines 1 and 2 of the chart pertain to the satisfactory academic progress requirements; line 3 pertains to the program pursuit requirement. Repeat courses (the registration of a class that has already met the student's degree requirements) may not count towards the minimum enrollment of 12 credits for full-time status. Additional information or clarification is available from the Office of Student Financial Services, or on their Web site at www.brooklyn.liu.edu/financialaid.

Aid for Part-Time Study Program (APTS)

This New York State grant program is available to U.S. citizens or permanent residents who are part-time students (registered for a minimum of 3 and a maximum of 11.5 credits per semester) and New York State residents. Based on net New York State taxable income, APTS awards may provide up to \$1,000 per semester.

New York State requires that the University set a deadline for all applicants, and that a list of final candidates be sent to Albany. Once a list of candidates is submitted, no other student may be added. Applicants must be in good academic standing and must have remaining TAP eligibility (they may not have already received eight semesters of TAP funding). Standards of satisfactory academic progress are measured in the same manner as the TAP program and students may refer to the TAP chart for details. *Applications are available in the Office of Student Financial Services, and require income documentation.*

**Standards of Satisfactory Academic Progress
Title IV Financial Aid Programs
Full-Time Students
Length of Program—9 Years
Half-Yearly Increments**

Year Equivalents	0.5	1	1.5	2	2.5	3	3.5	4	4.5	5	5.5	6	6.5	7	7.5	8	8.5
Number of Credits per Half Year	6	6	9	9	9	9	12	12	12	12	12	12	12	12	14	14	14
Cumulative Credits	6	12	21	30	39	48	60	72	84	96	108	120	132	144	158	172	186

In addition to maintaining the yearly increments of credits earned, students must also satisfy the average requirements as detailed in this bulletin: students who have earned fewer than 30 credits must maintain a 1.8 grade-point average; students who have earned 30 credits or more but fewer than 60 credits must maintain a 1.9 grade-point average; students who have earned 60 credits or more must maintain a 2.0 grade point-average.

Addendum for Chart

1. Title IV probation status will be considered in the following manner:
 - a) A review is made at the end of each semester to determine if a student's average is satisfactory.
 - b) A review is made at the end of the Spring semester of each year for determination of work completed.
 - c) If a student has failed to meet the minimum requirements, the student is placed on probation for the following year.
 - d) At the end of the following year, after the Spring semester, a determination is made, and if progress (as defined below) toward minimum standards has still not been made, the student will lose eligibility for the third year.

- e) Progress toward the minimum standards is defined as:
 - 1) completing the minimum number of credits required for that yearly or cumulative increment, or
 - 2) showing improvement in the grade-point average.
2. "P" grades will be reviewed for grade-point average requirements by the Dean.
3. "U," "F," "W," "WF," "INC," "ABS," "UW," "NGR," "AUD" grades do not count toward successful completion requirements. Repeated courses count only once toward credits earned.
4. Part-time students should simply prorate the requirements which appear on the full-time chart.

A student must conform to the standards of good academic standing published in this University bulletin. Records of a student who is on probation, or who fails to make adequate progress toward his or her degree, are subject to review for mitigating circumstances based upon professional judgment. A student remains in good standing and eligible to receive Title IV funds until he or she is declared ineligible. The determination will be made at least at the end of each academic year.

**Standards of Satisfactory Academic Progress for the Purpose of
Determining Eligibility for State TAP Awards Professional Program Chart for
Students Who Received a TAP Award Prior to the 2006-07 Academic Year**

Before being certified for this TAP payment, a student must:	1st Payment	2nd Payment	3rd Payment	4th Payment	5th Payment	6th Payment	7th Payment	8th Payment
1. Have earned this minimum number of credits	0	0	9	21	33	45	60	75
2. Have earned this minimum cumulative grade-point average	0	0	1.2	1.3	2.0	2.0	2.0	2.0
3. Have completed in the previous term this minimum number of credits without withdrawals	0	6	6	9	9	12	12	12

**Standards of Satisfactory Academic Progress for the Purpose of Determining Eligibility for State TAP Awards
Professional Program Chart for Students Who Are First-Time New York State Aid Recipients Beginning with the
2006-07 Academic Year**

Before being certified for this TAP payment, a student must:	1st Payment	2nd Payment	3rd Payment	4th Payment	5th Payment	6th Payment	7th Payment	8th Payment
1. Have earned this minimum number of credits	0	3	9	21	33	45	60	75
2. Have earned this minimum cumulative grade-point average	0	1.1	1.2	1.3	2.0	2.0	2.0	2.0
3. Have completed in the previous term this minimum number of credits without withdrawals	0	6	6	9	9	12	12	12

GRADUATE PROGRAMS

The College of Pharmacy offers graduate curricula leading to the Doctor of Philosophy in Pharmaceutics (Ph.D.) degree, and the Master of Science (M.S.) degree in the following fields, as registered with the New York State Education Department: Pharmaceutics, Pharmacology/Toxicology, Pharmacy Administration, and Drug Regulatory Affairs. As part of the above M.S. degree programs, students may seek specialization in these areas: Industrial Pharmacy, Cosmetic Science, and Health Care Marketing Administration.



Graduate Curriculum

Division of Pharmaceutical Sciences

Division Director,
Fotios M. Plakogiannis, Ph.D.
Telephone: (718) 488-1101

Doctor of Philosophy Degree

with specialization in
Pharmaceutics

Program Director,
Fotios M. Plakogiannis, Ph.D.
Telephone: (718) 488-1101

Pharmaceutics

The Doctor of Philosophy program offers a diversified curriculum that is fundamentally based on scientific principles of chemistry and mathematics yet permits one to specialize in many areas of research and preformulation, including: solubility and stability; dosage form design; development; controlled drug delivery dosage forms, including oral, parenteral, transdermal, and nasal routes of administration; manufacturing; and biopharmaceutics and pharmacokinetics. Accordingly, prerequisites to the core curriculum are courses in organic chemistry, physiology, pharmacology, calculus and differential equations. These background courses are all available at the University, and students who lack these prerequisites will be required to take the appropriate courses prior to the beginning of their doctoral studies.

Required Courses

	Cr.
BIO 692 Molecular Biology	3
CHE 621 Advanced Organic Chemistry I	3
MAT 610 Differential Equations I	3
MAT 611 Differential Equations II	3
PHS 021 Seminar in Pharmaceutics*	1
PHS 701 Physical Chemistry I	3
PHS 702 Physical Chemistry II	3
PHS 880 Thermal Physics and Applications to the Chemistry of Pharmaceutical Systems I	3



PHS 901 Basic Pharmaceutics (required for foreign students and non-Pharmacy majors)	3	Pharmacy	3
PHS 972 Methods of Pharmaceutical Analysis	3	PHS 931 Advanced Physical Pharmacy I	3
PHS 987 Advanced Biopharmaceutics and Pharmacokinetics	3	PHS 932 Advanced Physical Pharmacy II	3
PHS 990 Pharmacokinetic Modeling	3	PHS 934 Principles of Industrial Pharmacy I	3
PHS 991 Solubility and Complex Equilibria	3	PHS 935 Principles of Industrial Pharmacy II	3
PHS 992 Drug Delivery and Transport Processes	3	PHS 936 Dosage Form Design	3
PHS 993 Kinetics and Mechanisms of Drug Degradation	3	PHS 937 Pharmaceutical Engineering	3
PHS 994 Drug Stabilization	3	PHS 950 Cosmetic/Dermatological Formulations and Technology I	3
PHS 996 Interfacial Phenomena	3	PHS 951 Cosmetic/Dermatological Formulations and Technology II	3
	48	PHS 954 Special Topics in Pharmaceutical and Cosmetic Microbiology	3
*Students are required to register for three semesters; one credit per semester.			
Electives	Cr.	PHS 955 Integrated Dosage Form Development	3
BIO 505 Electron Microscopy Lecture	3	PHS 958 Aerosol Science and Technology	3
BIO 506 Electron Microscopy Laboratory	3	PHS 960 Properties/Applications of Cosmetic and Pharmaceutical Raw Materials	3
BIO 647 Immunology	4	PHS 970 Principles of Quality Assurance	3
CHE 581 Computational Chemistry	3	PHS 975 Introduction to Packaging Principles	3
CHE 589 Scientific Computer Programming and Interfacing	3	PHS 980 Sterile Products	3
CHE 606 Advanced Physical Chemistry	3	PHS 981 Polymers in Pharmaceutical Systems	3
PHS 070 Special Problems	3	PHS 982 Science and Technology of Controlled Release Systems	3
PHS 881 Thermal Physics and Applications to the Chemistry of Pharmaceutical Systems II	3	PHS 986 Microencapsulation	3
PHS 886 Computational Methods and Data Analysis	3	PHS 989 Special Topics in Pharmaceutics	1-3
PHS 902 Regulatory Compliance in the Practice of Industrial		PHS 995 Transport Phenomena and Drug Delivery II	3
			9

Research and Thesis	
PHS 998 Ph.D. Research and Thesis	Cr. 12
Total Credits	69

Degree Requirements

Students must complete 69 credits of course work, including a minimum of four semesters of the Research and Thesis course, pass the NIH-style proposal, and successfully defend orally their Ph.D. doctoral dissertation.

In addition to the above, the student must demonstrate a reading proficiency in an approved language which is not the student's native language. Alternately, the language requirement can be satisfied if the student successfully completes 6 credits of advanced course work in an allied area such as computers. Students who have earned an M.S. degree may receive up to 18 credits if the M.S. courses are appropriate.

Plan of Study

The plan of study for the Ph.D. in Pharmaceutics is available from the Division of Pharmaceutics and Industrial Pharmacy Office.

Master of Science Degree – Pharmaceutics

with specialization in Industrial Pharmacy Cosmetic Science

Industrial Pharmacy

The primary goal of the program is to provide advanced study opportunities for individuals interested in various aspects of drug development in the pharmaceutical industry. The areas include pharmaceutical research and development, manufacturing, unit operations and related activities. The program options provide for both thesis and non-thesis pathways, and considerable flexibility in program planning based upon the student's industrial experience.

Required Courses*

PHS 020 Seminar in Pharmaceutics	Cr. 3
PHS 701 Physical Chemistry I	3
PHS 901 Basic Pharmaceutics (required for foreign students)	

and non-Pharmacy majors)	3
PHS 931 Advanced Physical Pharmacy I	3
PHS 934 Industrial Pharmacy I	3
PHS 935 Industrial Pharmacy II (including laboratory)	3
PHS 972 Methods of Pharmaceutical Analysis	3
PHS 985 Biopharmaceutics/ Pharmacokinetics	<u>3</u> 24

*All entering students must successfully complete *Mathematics 40* or equivalent.

Electives & Research

	Cr.
PHA 010 Biostatistics	3
PHS 702 Physical Chemistry II	3
PHS 769 Transdermal Drug Delivery	3
PHS 779 Applied Statistics in Pharmaceutical Sciences	3
PHS 902 Regulatory Compliance in the Practice of Industrial Pharmacy	3
PHS 932 Advanced Physical Pharmacy II	3
PHS 936 Dosage Form Design	3
PHS 937 Pharmaceutical Engineering	3
PHS 950 Dermatological Formulations Technology I	3
PHS 951 Dermatological Formulations Technology II	3
PHS 958 Aerosol Science and Technology	3
PHS 960 Properties/Applications of Cosmetic and Pharmaceutical Raw Materials	3
PHS 970 Principles of Quality Assurance	3
PHS 979 Design of Peptide and Protein Drug Delivery Systems	3
PHS 984 Biomaterials in Pharmacy and Medicine	3
PHS 986 Microencapsulation	<u>3</u> 12

Total Credits	36
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In consultation with the Division Director, students may select electives from the graduate course offerings.

Degree Requirements

Students taking the Non-Thesis Option must complete 36 credits of course work and pass the written Comprehensive Examination.

Students taking the Thesis Option must complete 33 credits of course work of which 6 credits are for Research and Thesis, PHS 060. Thesis students must register for PHS 060 in two consecutive semesters, 3 credits each semester.

Cosmetic Science

In keeping with the rapid changes and advances in the field of cosmetic science, the graduate program in cosmetic science provides an appropriate blend of course work in the areas of chemistry, pharmacology, toxicology, microbiology and pharmacy. These disciplines are coupled with their applications to the development and formulation of cosmetic products, and will serve to help the student to function more effectively in the cosmetic industry.

Required Courses

	Cr.
PHA 010 Biostatistics	3
PHS 022 Seminar in Cosmetic Science	3
PHS 931 Advanced Physical Pharmacy I	3
PHS 950 Cosmetic/Dermatological Formulations and Technology I	3
PHS 951 Cosmetic/Dermatological Formulations and Technology II	3
PHS 952 Cosmetic/Dermatological Formulations and Technology Laboratory	3
PHS 960 Properties/Applications of Cosmetic and Pharmaceutical Raw Materials	3
PHS 972 Methods of Pharmaceutical Analysis	<u>3</u> 24

Electives & Research

	Cr.
PHS 769 Transdermal Drug Delivery	3
PHS 779 Applied Statistics in Pharmaceutical Sciences	3
PHS 932 Advanced Physical Pharmacy II	3
PHS 936 Dosage Form Design	3
PHS 954 Special Topics in Pharmaceutical and Cosmetic Microbiology	3
PHS 958 Aerosol Science and Technology	3
PHS 970 Principles of Quality Assurance	3
PHS 975 Introduction to Packaging Principles	<u>3</u> 12

Total Credits	36
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In consultation with the Division Director, students may select electives from the graduate course offerings.

Degree Requirements

Students taking the Non-Thesis Option must complete 33 credits of

course work and pass the written Comprehensive Examination. Students taking the Thesis Option must complete 30 credits of course work of which 6 credits are for Research and Thesis, PHS 060. Thesis students must register for PHS 060 in two consecutive semesters, 3 credits each semester.

Master of Science Degree

with specialization in
Pharmacology/Toxicology

Pharmacology/ Toxicology

The specialization in Pharmacology/Toxicology is available to those individuals holding a baccalaureate degree from an accredited program in biological or chemical sciences and related disciplines, pharmacy graduates and other healthcare practitioners. The program is intended to develop the skills needed to:

1. pursue a research and/or teaching career in a related discipline;
2. determine drug activity, effectiveness and toxicity;
3. develop new methodologies for drug evaluation according to good laboratory practices; and
4. critically evaluate experimental data as presented in the literature.

Undergraduate Prerequisites:
Biochemistry, Physiology and Pharmacology

The following courses are open only to students enrolled in the graduate program or those in graduate standing.

Required Courses

PHA 010 Biostatistics	Cr. 3
PTM 020 Seminar in Pharmacology/ Toxicology	3
PTM 704 Autonomic Pharmacology	3
PTM 705 Biochemical Pharmacology	3
PTM 709 Advanced Pharmacology	3
PTM 802 Experimental Methods in Pharmacology/Toxicology	3
PTM 910 Toxicology of Drugs and Chemicals	3
Total Credits	21

Electives and Research

PHA 603 Drug Regulatory Affairs	Cr. 3
PTM 707 Carcinogens, Mutagens, Teratogens	3
PTM 708 Cardiovascular Pharmacology	3
PTM 709 Advanced Pharmacology	3
PTM 711 Current Technologies in Pharmacological Research and Development	3
PTM 804 Inborn Errors of Metabolism	3
PTM 902 Advanced Medicinal Chemistry	3
PTM 905 Principles of Immunotherapy	3
PTM 907 Psychopharmacology	3
PTM 912 Environmental Toxicology	3
PTM 913 Drugs of Abuse	3
PTM 914 Chemotherapy	3
PTM 916 Renal Pharmacology	3
PTM 917 Molecular Toxicology	3
PTM 920 Molecular Pharmacology	3
	15

Total Credits
for Pharmacology/Toxicology 36

Degree Requirements

Students taking the Non-Thesis Option must complete 36 credits of course work and pass the written Comprehensive Examination.

Students taking the Thesis Option must complete 33 credits of course work of which 6 credits are for Research and Thesis, PTM 060. Thesis students must register for PTM 060 in two consecutive semesters, 3 credits each semester.

Division of Social and Administrative Sciences

Division Director,
Donna Dolinsky, Ph.D.
Telephone: (718) 488-1105

Master of Science Degree

with specialization in
Pharmacy Administration
Drug Regulatory Affairs

Pharmacy Administration

The Pharmacy Administration specialization is oriented toward individuals whose objectives lie in the management areas of marketing, sales and advertising in the pharmaceutical industry. The program is built upon a firm foundation of management sciences, economic and financial principles, and the quantitative tools necessary to assume positions of responsibility in the health-care industry.

Required Courses

PHA 010 Biostatistics	Cr. 3
PHA 601 Marketing Research and Analysis	3
PHA 604 Pharmacoeconomics	3
PHA 606 Sales Management	3
PHA 607 Behavioral Pharmacy	3
PHA 613 Marketing Management	3
PHA 633 Pharmaceutical Advertising and Promotion	3
PHA 653 Seminar in Social and Administrative Sciences	3
	24

Electives and Research

PHA 050 Research Methodology*	Cr. 3
PHA 060 Research and Thesis*	3
PHA 603 Drug Regulatory Affairs	3
PHA 605 Human Resources Management	3
PHA 614 Health Literacy	3
PHA 644 Internship in Marketing	3
PHA 659 Public Policy in Health and Pharmacy	3
PHA 661 Pharmaceutical Industry	3
	9

Total Credits 33

*Required for students electing the Thesis Option.

In consultation with the Division Director, students may select electives from the graduate course offerings in the Division of Social and Administrative Sciences and the School of Business, Public Administration and Information Sciences.

Degree Requirements

Students taking the Non-Thesis Option must complete 33 credits of course work and pass the written Comprehensive Examination.

Students taking the Thesis Option must complete 33 credits of course work

of which 3 credits are for Research Methodology, PHA 050, and 6 credits are for Research and Thesis, PHA 060. Thesis students must register for PHA 060 in two consecutive semesters, 3 credits each semester.

Drug Regulatory Affairs

Drug Regulatory Affairs is an exceedingly complex and growing field of endeavor. Almost every operational component of the pharmaceutical industry is strongly dependent on having individuals with expertise related to the legal and regulatory environment, as well as clinical research protocols.

The program is intended to help students gain an understanding of and appreciation for the myriad Federal statutes and regulations that control the drug-approval process not only in the United States but worldwide. Another aim of the program is to provide the stimulating background for students to make the most of their capabilities and to prepare them for a dynamic work environment in which they will function more effectively.

Required Courses

	Cr.
PHA 010 Biostatistics	3
PHA 603 Drug Regulatory Affairs	3
PHA 651 Pharmaceutical Labeling, Advertising and Promotion	3
PHA 653 Seminar in Social and Administrative Sciences	3
PHA 654 Regulation of OTC Drugs, Medical Devices, Cosmetics, and Animal Drugs	3
PHA 657 Principles and Practices of Regulatory Compliance and Enforcement	3
PHA 660 Mechanics of Preparing INDs and NDAs	3
PHA 661 Pharmaceutical Industry	3
	24

Electives and Research

	Cr.
PHA 050 Research Methodology*	3
PHA 060 Research and Thesis*	3
PHA 601 Marketing Research and Analysis	3
PHA 604 Pharmacoeconomics	3
PHA 607 Behavioral Pharmacy	3
PHA 613 Marketing Management	3
PHA 614 Health Literacy	3
PHA 645 Internship in Drug Regulatory Affairs	3
PHA 655 Chemistry, Manufacturing and Controls (CMC) Regulatory Affairs	3

PHA 656 Current Enactments, Regulations and Guidelines	3
PHA 659 Public Policy in Health and Pharmacy	<u>3</u>
	9

Total Credits 33

*Required for students taking the Thesis Option.

In consultation with the Division Director, students may select electives from the graduate course offerings in the Division of Social and Administrative Sciences and the School of Business, Public Administration and Information Sciences.

Degree Requirements

Students taking the Non-Thesis Option must complete 33 credits of course work and pass the written Comprehensive Examination. Students taking the Thesis Option must complete 33 credits of course work of which 3 credits are for Research Methodology, PHA 050, and 6 credits are for Research and Thesis, PHA 060. Thesis students must register for PHA 060 in two consecutive semesters, 3 credits each semester.

GRADUATE COURSE DESCRIPTIONS

Course schedules are printed every semester. The listings below are tentative. They are based on past history and are subject to change.

Division of Pharmaceutical Sciences

Master of Science Courses

Pharmaceutics, Industrial Pharmacy, and Cosmetic Science

PHS 020 Seminar in Pharmaceutics

(For M.S. Students)

A presentation and analysis of recent developments in industrial pharmacy and pharmaceutics. Students are expected to present oral and written reports on a particular subject in consultation with the instructor in charge. May be repeated for credit. **Staff**

Every Semester, 3 credits

PHS 022 Seminar in Cosmetic Science

(For M.S. Students)

A presentation and analysis of recent developments in cosmetic science. Students are expected to present oral and written reports on a particular cosmetic topic in consultation with the instructor in charge. Pass-Fail only. **Staff**

Fall, 3 credits

PHS 060 Research and Thesis

Individual research in the various areas



of specialization. Students doing the thesis option must register at least twice for this course. Pass-Fail only. **Staff**
Every Semester, 3 credits

PHS 070 Special Problems

Laboratory, fieldwork or library research in the various areas of specialization. Pass-Fail only. **Staff**
Prerequisite: Permission of the instructor
Every Semester, 3 credits



PHS 701 Physical Chemistry I

The emphasis will be on chemical thermodynamics, from fundamental principles to applications in chemical equilibrium, including the concept of activity in nonideal systems, and electrochemistry of the pH electrode and other ion selective electrodes. **Bellantone, Jochsberger, Savva**
Fall, 3 credits

PHS 702 Physical Chemistry II

The emphasis of this course is on chemical kinetics, from experimental measurement of rate processes to activation theory and enzyme kinetics. Steady state activation theory will be included. **Bellantone**
Spring, 3 credits

PHS 769 Transdermal Drug Delivery

Today's pharmaceutical scientists, regardless of their area of practice — R&D, manufacturing, etc. — must have a basic knowledge of drug delivery from all dosage forms. Therefore, this course is intended to train the pharmaceutical scientist in preparing a transdermal dosage form capable of delivering the active ingredient to the blood circulation through the skin in quantities sufficient to produce a therapeutic effect. Two lecture hours and three laboratory hours. **Plakogiannis**
Fall, Spring, 3 credits

PHS 779 Applied Statistics in Pharmaceutical Sciences

This is a three-credit course consisting of three lecture hours per week. The course will provide a basic understanding of applied statistics for graduate students in pharmaceutical sciences, including experimental design and interpretation of results. The material mastered from this course will help the student to formulate a research question, to develop an appropriate experimental design, and to select the appropriate statistical tool(s) to analyze experimental data. The course will provide hands-on experience with professional statistical software packages e.g., SPSS. Additionally, the course will enhance the student's ability to evaluate the literature in terms of the validity of the results of published studies. **Staff**
Fall, Spring, 3 credits

PHS 931 Advanced Physical Pharmacy I

A systematic study of the application of physico-chemical principles to the pharmaceutical and cosmetic sciences. Topics include complexation, colloids, interfacial phenomena, dissolution theory, suspensions, micromeritics and rheology. **Jochsberger, Plakogiannis, Savva**
Prerequisite: Math 40
Every Semester, 3 credits

PHS 932 Advanced Physical Pharmacy II

An in-depth analysis of the chemical kinetics of pharmaceutical systems as applied to both in-vitro and in-vivo models. Drug decomposition, stabilization and storage of solutions, polyphasic systems and solids are emphasized. **Jochsberger, Bellantone, Savva**
Prerequisite: PHS 931
On Occasion, 3 credits

PHS 934 Principles of Industrial Pharmacy I

A study of methods used to formulate, manufacture and stability-test various dosage forms including tablets, ointments, creams, capsules, suspensions, sterile products, etc. The different techniques used to formulate dosage forms possessing unique properties such as sustained or delayed release will also be covered. **Patel**
Fall, 3 credits each semester

PHS 935 Principles of Industrial Pharmacy II

A laboratory course designed to give students experience in utilizing industrial instrumentation to test basic principles

and theories in the design and production of various dosage forms. **Patel**
Laboratory fee: \$115.00
Spring, 3 credits

PHS 936 Dosage Form Design

Biopharmaceutical and pharmacokinetic principles, coupled with physical pharmacy concepts, are used to discuss methods necessary for optimizing the design of various drug-delivery systems. The course is intended for those having a basic understanding of dosage forms and their design, and is geared to the underlying principles of drug release from dosage forms. While a major portion of the course is devoted to oral solids, liquids, topicals and parenteral design are also covered, together with means of evaluation and testing. **Patel**
On Occasion, 3 credits

PHS 937 Pharmaceutical Engineering

An introduction to basic engineering principles that are involved in the commercial manufacture of pharmaceutical dosage forms. Discussions will focus on how such principles as blending, mixing, heat and mass transfer are utilized to design and specify equipment used in producing powders, tablets, capsules and parenteral products. Basic concepts of cost estimation will also be discussed. **Staff**
On Occasion, 3 credits

PHS 950, 951 Cosmetic/Dermatological Formulations and Technology I & II

Designed for in-depth studies of skin, mechanistic analysis of the relevant skin functions, percutaneous absorption, rationale for dermatological formulations, physicochemical principles used, performance criteria and evaluation of the topical systems. Emphasis is placed on the product development, scale-ups, manufacturing, stability-testing and performance evaluations of modern-day cosmetic, toiletry and pharmaceutical topical products. The courses cover all types of skin care, hair care and treatment systems including creams, lotions, shampoos, gels, fluids, makeups, sunscreens and pharmaceutical dermatologicals. **Babar, Sidhom**
Fall and Spring Consecutively, 3 credits each semester

PHS 952 Cosmetic/Dermatological Formulations and Technology Laboratory

Designed for in-depth study of product development, scale-up, manufacturing,

stability-testing and performance evaluations of modern-day cosmetic and toiletry products. **Babar, Sidhom**
Laboratory Fee: \$115.00
On Occasion, 3 credits

PHS 954 Special Topics in Pharmaceutical and Cosmetic Microbiology

Laboratory design and equipment requirements include discussions of laminar flow, automation, etc. Special attention to: legal requirements, sanitation and good manufacturing practices; disinfectants, antiseptics, preservatives and preservation; test methods for air, water, raw materials, finished products; sterility tests and new techniques in diagnostic work; assay methods; evaluation of personal products; microbiological statistics. **Staff**
On Occasion, 3 credits

PHS 955 Integrated Dosage Form Development

The course will introduce students to the challenges of pharmaceutical development in a regulated environment and will emphasize the role of a pharmaceutical scientist in drug discovery development. An overview of the drug discovery process will be provided, underscoring the importance of basic biopharmaceutical principles in optimal drug candidate selection. Preformulation considerations and formulation development for clinical studies and commercialization will be discussed. The role of drug delivery technologies to enhance product performance or improve patient compliance will be reviewed. Students will be introduced to the regulatory aspects of drug product development including stability testing, bioavailability, bioequivalence, and technology transfer. The scope and need for stronger collaboration between the industry and academia will be highlighted. **Staff**
Fall, 3 credits

PHS 958 Aerosol Science and Technology

An in-depth study of the physicochemical principles of aerosol science and technology. The topics covered include: aerosol propellants, containers, valve and actuator systems, product development, manufacturing, stability testing and performance evaluations of all types of aerosol products. Special emphasis is placed on the homogeneous and heterogeneous systems used in the formulations of topical, nasal and inhalation aerosol drug delivery products. **Babar, Cutie**
On Occasion, 3 credits

PHS 960 Properties/Applications of Cosmetic and Pharmaceutical Raw Materials

Designed to be of special value to individuals involved in formulation and manufacturing work of cosmetic, toiletry and pharmaceutical products. Covers the physicochemical properties of major classes of raw materials. These include tablets, ointments and creams, surfactants, film formers, plasticizers, preservatives, antioxidants, sunscreens, thickeners and dispersants, pharmaceutical solvents, etc. Special emphasis is placed on the creative and innovative application of these raw materials in the development of contemporary cosmetic/toiletry and pharmaceutical dosage forms. **Babar, Sidhom**
Fall, 3 credits

PHS 970 Principles of Quality Assurance

Provides an introduction to both theory and practice of the total control of quality in pharmaceutical manufacturing. Topics include: total quality control; quality assurance organization and its role in research, development and production; current good manufacturing practices; statistical quality control and expanded discussions on process validation and stability and expiration dating. **Jochsberger, Sidhom**
Fall, 3 credits

PHS 972 Methods of Pharmaceutical Analysis

Theory of chromatographic, spectrophotometric and other methods of analysis as applied to clinical, pharmaceutical and cosmetic problems is discussed. **Sidhom**
Spring, 3 credits

PHS 975 Introduction to Packaging Principles

The course will review the structure and composition of various materials used in the preparation of consumer-oriented primary and secondary packaging (pharmaceutical, cosmetic, device, etc.). Their potential interaction and impact on shelf life will be discussed, with the accent on fundamental physical chemical principles applied to package function and design. Regulatory aspects will be discussed whenever applicable. Field trips will be made to give emphasis to the relevance of scientific principles in practical applications. **Staff**
On Occasion, 3 credits

PHS 979 Design of Peptide and Protein Drug Delivery Systems

The course covers an introduction to the gene-cloning technology and ex-vivo cell

cultures as a new source for protein and peptide drugs. The course will discuss the chemistry, physical chemistry and biochemical properties of polypeptides; physical and chemical degradation pathways characteristic to protein drugs; suggested mechanisms of protein drug absorption; classification and properties of absorption promoters for macromolecules; how to design the appropriate delivery system for a stable, effective protein drug through parenteral or non-parenteral routes. Specific protein products for the diagnosis, treatment and prevention of diseases, which are now commercially available, will be covered. Three lecture hours. **Staff**
Prerequisites: PHS 311, 312 or equivalent
On Demand, 3 credits

PHS 980 Sterile Products

The course will provide the fundamental principles used to formulate, manufacture and control sterile products, primarily injectables. Topics to be covered will include formulation criteria, steam, dry heat and ethylene oxide sterilization, sterile filtration, aseptic filling, process validation and packaging selection and evaluation. Demonstrations and experiments will provide first-hand experience in the use of equipment and procedures employed to manufacture sterile products. **Babar, Cutie, Sidhom**
On Occasion, 3 credits

PHS 981 Polymers in Pharmaceutical Systems

Polymers are widely used in pharmacy as adjuvants, suspending and emulsifying agents, flocculating agents, adhesives, packaging and coating materials. What are the fundamental properties of polymer molecules that lend themselves to such widespread pharmaceutical applications? Although polymers of natural origin are familiar members of the pharmacopoeia, the explosive development of the polymer field has led to new possibilities in the utilization of synthetic materials for pharmaceutical systems; in particular, for the more efficient novel drug delivery devices. An understanding of the nature of polymers ranging from the random chain of repeating units to the more complex and highly specific proteins is necessary to custom-make or modify naturally existing structures to produce useful new pharmaceutical products. This course will provide the student with an understanding of the basic concepts and phenomena of polymers with respect to their end-use in pharmacy. **Staff**
Prerequisite: PHS 931
On Occasion, 3 credits

PHS 982 Science and Technology of Controlled Release Systems

This course will cover design and fabrication of currently utilized devices for controlling the release of drugs to the human body. A wide variety of drug delivery system designs will be analyzed in this course. Mechanisms and kinetics of drug release from these systems, structure and properties of fabrication materials, principles of molecular diffusion across polymer barriers and transport across biological interfaces will be covered.

This course is a senior elective for both M.S. and Ph.D. students. **Staff**
On Occasion, 3 credits

PHS 984 Biomaterials in Pharmacy and Medicine

This course will cover combined application of the principles of physical chemistry, biochemistry, materials engineering, mass transfer, fluid mechanics and biological interactions to pharmaceutical and biomedical problems. Some of the realities of biomaterials research, development and performance will also be explored. Case studies include consideration of the selection of materials: components of, or entire, drug-containing implants and artificial organs for use in contact with body fluids; state-of-the-art research ideas; and the relationship of those ideas to improved pharmaceutical and medical systems. Three lecture hours. **Staff**

On Demand, 3 credits

PHS 985 Biopharmaceutics and Pharmacokinetics

The application of pharmacokinetic principles and pharmacokinetic models to dosing, bioavailability and bioequivalence of drugs (i.e. Digoxin, Phenytoin, Theophylline, etc.). **Jochsberger, Plakogiannis, Stagni, Taft**

On Occasion, 3 credits

PHS 986 Microencapsulation

This course will provide a comprehensive study of the design and production of fine particles, including microcapsules, microspheres, and nanoparticles. The course will stress microencapsulation processes of pharmaceuticals. It will discuss the state of the arts, sciences, and modern techniques that must be mastered to be able to prepare and test products that will work correctly, effectively, and be clinically acceptable for human or animal use. It covers the microencapsulation materials and technologies from chemical, physicochemical, to mechanical procedures. This course also includes characterization and dosage forms of

microencapsulation products. Three lecture hours. **Staff**
Every other year, 3 credits

Doctor of Philosophy Courses**PHS 021 Seminar in Pharmaceutics (For Ph.D. Students)**

A presentation and analysis of recent publications and developments in pharmaceuticals. The students are expected to make presentations and/or write reports on specific topics. Outstanding scientists may be involved from time to time. This course is open for the Ph.D. level student. M.S. candidates may be allowed with the permission of the Program Director. Ph.D. candidates must register for three consecutive semesters and must attend and participate throughout their studies. Pass-Fail only. **Staff**
Every Semester, 1 credit

PHS 880 Thermal Physics and Applications to the Chemistry of Pharmaceutical Systems I
PHS 881 Thermal Physics and Applications to the Chemistry of Pharmaceutical Systems II

These are elective courses intended for Ph.D. students. They offer an integrated treatment of the theory of energetic processes and applications that are relevant to pharmaceutical science. The first semester will develop equilibrium macroscopic and statistical thermodynamics, and introduce the concepts on nonequilibrium thermodynamics. The second semester will more fully develop the basic theory of nonequilibrium thermodynamics and the thermodynamics of processes. Applications will be introduced throughout the course and include colligative properties of solutions, Debye-Huckel theory, phase changes and thermodynamic stability, chemical equilibrium and reactions, surface effects, adsorption, polymer chain statistics, Flory-Huggins theory, and thermal analysis. **Bellantone**

Prerequisites: PHS 880: two semesters of Physical Chemistry (PHS 701-702), PHS 991 (Solubility & Complex Equilibria), and two semesters of differential equations (Math 104).

PHS 881: Thermo Dynamics I and PHS 992 (Transport Phenomena and Drug Delivery) Fall and Spring Consecutively 3 credits each semester

PHS 886 Computational Methods of Data Analysis

This is an elective course intended for Ph.D. students. The course offers an integrated treatment of the methods of analyzing data using the equations derived from physical models. Topics include elementary statistics review, regression methods, analysis of errors, and computational methods. Special consideration will be given to methods of transforming equations and/or data into forms most useful for data analysis, special functions (error function, Bessel functions, etc.), and special problems that can arise with various methodologies. Many of the examples and exercises will be taken from probability theory and statistics, so this course will also serve as a primer in statistics. **Bellantone**
Prerequisites: Two semesters of Physical Chemistry (PHS 701-702), PHS 991 (Solubility & Complex Equilibria), and at least one semester of Differential Equations. (Math 104).

Every Semester, 3 credits

PHS 901 Basic Pharmaceutics

(Open to foreign students and non-Pharmacy majors)

An introduction to basic pharmaceutical principles associated with pharmaceutical dosage forms. Discussions will focus on factors affecting dosage form design, manufacturing of different dosage forms, biopharmaceutics, pharmacokinetics, drug stability, FDA approvals and recalls, so that the student can obtain the knowledge needed to succeed in the M.S. and Ph.D. curricula. Waiver may be authorized by the division only. **Staff**
Fall, 3 credits

PHS 902 Regulatory Compliance in the Practice of Industrial Pharmacy

The course discusses the role of the FDA and other regulatory agencies whose actions impact on the pharmaceutical, biotechnology and cosmetic industries. GMP's, GLP's, FDA inspections, validation and other topics are discussed to highlight agencies' requirements and the do's and don'ts for compliance. **Staff**
On Occasion, 3 credits

PHS 987 Advanced Biopharmaceutics and Pharmacokinetics

Biopharmaceutics is the study of the relationship between the physical and chemical factors of a drug in a dosage form and the resultant impact on the rate and extent of drug absorption and, ultimately, the pharmacologic response observed

after its administration. Pharmacokinetics concerns the mathematical representation of drug absorption, distribution, metabolism and excretion. In this course, the principles and theories of biopharmaceutics and pharmacokinetics will be discussed, with emphasis on the various analytical tools to characterize drug disposition in vivo. The relationship between pharmacokinetics and pharmacodynamics will also be presented. The material mastered in this course will be used to develop and test mathematical models of drug disposition in PHS 990 (Mathematical Modeling). **Stagni, Taft**
Offered in Alternate Years, 3 credits

PHS 989 Special Topics in Pharmaceutics

Special topics in pharmaceutics which are of current interest. **Staff**
On Occasion, 1-3 credits

PHS 990 Mathematical Modeling

This course involves application of the pharmacokinetic principles presented in PHS 986 (Advanced Biopharmaceutics and Pharmacokinetics) to develop mathematical models which describe drug absorption, distribution, metabolism and excretion, with emphasis upon computer "fitting" of pharmacokinetic and pharmacokinetic-pharmacodynamic models to characterize the disposition of a compound in biological systems. **Stagni, Taft**
Prerequisite: PHS 986
Laboratory Fee: \$115.00
Offered in Alternate Years, 3 credits

PHS 991 Solubility and Complex Equilibria

The application of physicochemical principles to the study of complex equilibria, including the use of thermodynamics and mathematics to delineate the factors involved. **Staff**
Fall in Alternate Years, 3 credits

PHS 992 Transport Phenomena and Drug Delivery I

The application of the laws and mathematics of diffusion to dissolution, membrane transport and release of drugs from dosage forms. **Bellantone**
Spring in Alternate Years, 3 credits

PHS 993 Kinetics and Mechanisms of Drug Degradation

A study of the kinetics and mechanisms of drug degradation in the solid and liquid state. **Staff**
Spring in Alternate Years, 3 credits

PHS 994 Drug Stabilization

A study of drug degradation in multiphasic systems and their use in stabilizing labile drugs. **Staff**
Fall in Alternate Years, 3 credits

PHS 995 Transport Phenomena and Drug Delivery II

This is an upper-level elective course intended for senior Ph.D. students which builds on the required course PHS 992. The course offers a more advanced treatment of the physical and theoretical foundations of transport theory, and numerous applications in areas of current research, especially as related to pharmaceutical systems. The main emphasis is on mass transport, but heat and momentum transport will also be included. The necessary mathematics will be developed, as needed. Methods of data analysis and computational methods will be included as an integral part of the course. **Bellantone**
Spring in Alternate Years, 3 credits

PHS 996 Interfacial Phenomena

The application of physicochemical principles to the study of interfacial phenomena. The use of thermodynamics, kinetics and mathematics will be emphasized with applications to pharmaceutical systems, when possible. **Bellantone, Savva**
Fall in Alternate Years, 3 credits

PHS 998 Ph.D. Research and Thesis

Each Ph.D. candidate will conduct Ph.D. thesis research under the guidance of a committee whose chair will be the candidate's major professor. The enrollment and fee for this course registration will be repeated for a minimum of four semesters, and until the dissertation is completed. **Staff**
Every Semester, 3 credits each semester

Master of Science Courses

Pharmacology, Toxicology and Medicinal Chemistry

PTM 020 Seminar in Pharmacology/Toxicology

Students, faculty and guests review and discuss original works and recent advances in pharmacology and toxicol-

ogy. The seminar will include invited lectures on cutting edge-research. Mandatory for every student graduating in Pharmacology/Toxicology. May be repeated for credit. **Staff**
Every Semester, 3 credits

PTM 060 Research and Thesis

Individual research in the various areas of specialization. Students doing the thesis option must register at least twice for this course. Pass-Fail only. **Staff**
Every Semester, 3 credits

PTM 070 Special Problems

Laboratory, fieldwork or library research in the various areas of specialization. Pass-Fail only. **Staff**
Prerequisite: Permission of the instructor
Fall, Spring, Summer, 3 credits

PTM 704 Autonomic Pharmacology

A course designed to acquaint the students with the historical development of the concept of neurohumoral transmission, adrenergic and cholinergic receptors, storage and release of neurohormones, blocking agents, and biochemical aspects of adrenergic and cholinergic action. Students will be required to read and discuss selected references. **Reid, Vansal**
Fall, 3 credits

PTM 705 Biochemical Pharmacology

This course considers the mechanisms of drug action from the molecular-biochemical viewpoint. Initial discussion of the fundamentals of drug action is followed by extensive coverage of major drug groups such as anticancer, antimicrobials, analgesics and autonomic drugs. Molecular parameters of receptors are emphasized throughout as is enzymology, where applicable. Outside readings will be assigned. **Ratna**
Fall, Spring, 3 credits

PTM 707 Carcinogens, Mutagens, Teratogens

Basic concepts of biochemical toxogenesis; mechanisms involved in the types of carcinogenesis, mutagenesis and teratogenesis; chemical carcinogens; tests for carcinogenesis and mutagenesis; experimental aspects of teratogenesis; environmental agents, drugs and other agents as causative factors. **Ray**
Spring, 3 credits

PTM 708 Cardiovascular Pharmacology

This course will consider the rational therapy in cardiovascular diseases. Principles of physiology, pathology and pharmacology will be included in the discussion of hypertension, coronary artery disease, angina pectoris, myocardial infarction, congestive heart failure and arrhythmias. New treatment modalities will be considered. **Reid**

On Occasion, 3 credits

PTM 709 Advanced Pharmacology

This is an advanced course in the basic principles of pharmacology. Discussion will include receptor theory, enzyme activity and inhibition, structure activity relationship, pharmacokinetics, adverse reactions and drug-drug interactions.

Reid, Vansal

Fall, 3 credits

PTM 711 Current Technologies in Pharmacological Research and Development

The health-care professional of the 21st century must have a basic knowledge of scientific technologies that affect the community and impact the delivery of effective health care. This course will involve a combination of lectures and student presentations to explore the current areas of medical technology that are important to the health-care professional. Topics to be covered will include the latest developments in the areas of stem cell research, gene therapy, pharmacogenomics, human cloning, therapeutic antibodies, DNA profiling and genetically modified foods. **Joseph**

Spring, 3 credits

PTM 802 Experimental Methods in Pharmacology and Toxicology

Modern techniques used in the qualitative and quantitative evaluation of drugs and drug toxicity in animal systems.

These include whole animal studies, isolated tissue techniques and analytical instrumentation. Three-hour lecture and laboratory. **Ray**

Laboratory fee: \$90.00

Prerequisite: Pharmacology

Spring, 4 credits

PTM 804 Inborn Errors of Metabolism

This course will consider those inherited disorders which are the result of the body's failure to synthesize specific proteins (enzymes) needed for normal metabolism or the synthesis of abnormal proteins. **Joseph**

On Occasion, 3 credits

PTM 902 Advanced Medicinal Chemistry

This course will focus on the modern methods of drug design and development. The chemical and biochemical rationales for the design and development of drugs will be discussed. This will include approaches to the design of drugs and new therapeutic modalities directed at enzymes, receptors, membrane transport proteins and nucleic acids.

Computer-aided drug design principles will be explained. **Wu**

On Occasion, 3 credits

PTM 905 Principles of Immunotherapy

This course is concerned with the study of antigens and the immune system, the humoral response and the cellular response to antigen. Non-atopic immunological drug reactions and disease states characterized by abnormal immunological responses will be discussed. Research papers dealing with selected immunological topics will be assigned and discussed. **Reid**

On Occasion, 3 credits

PTM 907 Psychopharmacology

A comprehensive course covering the clinical considerations and biochemical basis of psychotic and neurotic disorders responding to drug therapy. Emphasis to be placed on the complete animal and human pharmacology of antipsychotic, anti-anxiety, antidepressant and anti-manic drugs. Appropriate stimulant and sedative/hypnotic agents and current trends and issues will be discussed. Student participation through research papers and seminars will be implemented. **Reid**

On Occasion, 3 credits

PTM 910 Toxicology of Drugs and Chemicals

General principles of toxicology; current trends and recent developments in the prevention, detection, diagnosis and treatment of acute and chronic toxicities from drugs and chemicals; toxic drug interactions. **Ray**

Fall, 3 credits

PTM 912 Environmental Toxicology

This course is concerned with the conditions under which exposure to environmental agents can cause toxicity. It includes toxic effects, mechanisms for toxicity, limits of safety and vehicles of exposure to toxic agents. Three lecture hours. **Ray**

On Occasion, 3 credits

PTM 913 Drugs of Abuse

A comprehensive course dealing with the common drugs of abuse. The terminology, chemistry, psychopharmacology, toxicology, treatment, medical use, laboratory identification and analysis of known classes of such drugs are discussed in detail. Topics covered include alcohol abuse, tobacco smoking and nicotine, caffeine and caffeinated beverages, stimulants, depressants, narcotics, hallucinogens and organic solvents. Modern trends, issues and objectives are emphasized. **Staff**

On Occasion, 3 credits

PTM 914 Chemotherapy

This course covers the basic principles of the pharmacology of chemotherapeutic agents. Emphasis will be on selective toxicity, mechanisms of chemotherapeutic activity, kinetics, adverse reactions and resistance. Bacterial, viral, fungal and cancer chemotherapeutic agents will be discussed. **Reid**

On Occasion, 3 credits

PTM 916 Renal Pharmacology

This course includes discussion of anatomy, histology and physiology of the kidneys. Emphasis will be given to the common renal diseases, their mechanisms and how these pathophysiological abnormalities can be treated by therapeutic agents. In addition, nephrotoxic mechanisms of several pharmacological agents will be discussed. **Staff**

On Occasion, 3 credits

PTM 917 Molecular Toxicology

A comprehensive course which will discuss highly focussed toxin-induced intracellular mechanisms and their molecular targets. Drug- and chemical-induced gene expression, modulation of expression of various genes by chemical antidotes. This course will include detailed discussion of toxin-induced perturbations, modes of cell death, and events at subcellular molecular sites inside the cell, e.g. nuclear (including DNA degrading and repair enzymes), electron transport chain dysfunctions, and cytoplasmic compartments (ribosomes, microsomes and other cytosolic components). **Ray**

On Occasion, 3 credits

PTM 920 Molecular Pharmacology

An advanced course in pharmacology dealing with the molecular mechanisms of drug action. The discussions will include receptor-drug interactions, importance of chirality, receptor-ligand interactions, interactions of drugs with endogenous polymers, modulators of

chemical transmitters and such other topics involving molecular biology.

Ratna

On Occasion, 3 credits

Division of Social and Administrative Sciences

PHA 010 Biostatistics

(This course is a prerequisite for all Division of Social and Administrative Sciences majors.)

An introductory course in statistics with emphasis on applications in the health sciences. Topics include description of data, measures of central tendency and dispersion, inferences from data, significant differences, and measures of similarity and differences among groups of data.

Dolinsky

Fall, Spring, 3 credits

PHA 050 Research Methodology

A course in the design, implementation and evaluation of research. Topics include problem identification, literature review, research approaches, hypotheses, data gathering instruments and methods, data analysis and generalization.

Staff

Fall, 3 credits

PHA 060 Research and Thesis

Individual research in the various areas of specialization. Pass-Fail only.

Staff

Prerequisites: PHA 050, 653

Fall, Spring, 3 credits

PHA 070 Special Problems

Laboratory, fieldwork or library research in the various areas of specialization.

Pass-Fail only.

Staff

Prerequisite: Permission of the instructor

On Demand, 3 credits

PHA 601 Marketing Research and Analysis

Insight is provided into research techniques and audits in preparing marketing and media studies and reports. A comprehensive study of marketing research principles, including sampling, questionnaire construction, surveys and panels. Readings and case studies provide practical experience in dealing with marketing research problems.

Lankalis

Spring, 3 credits

PHA 603 Drug Regulatory Affairs

(This course is a prerequisite for all DRA courses, except PHA 661.)

A comprehensive introductory course



which provides an overview, understanding of, and appreciation for the numerous statutes and regulations governing drugs, medical devices and cosmetics.

Islam, Pikulin

Fall, 3 credits

PHA 604 Pharmacoeconomics

This course presents socioeconomic aspects of health care which influence need, demand and provision of health care through the private and public sectors. The course will also develop basic concepts of economic theory as an analytical tool to understand them from provider as well as consumer points of view in an evolving health-care delivery system.

Staff

Fall, 3 credits

PHA 605 Human Resources Management

The objective of the course is to provide students with an understanding of the importance of using human resources to the optimum level through a review and application of the principles of continuous quality improvement (CQI). The course will examine several decision making techniques, leadership and management skills that are consistent with CQI. Students can expect a better understanding of developing a more organized work setting focusing upon teamwork to meet specified outcomes.

Romano

On Occasion, 3 credits

PHA 606 Sales Management

Attention is given to the development of the sales administrator and the salesperson. Among the topics discussed are: the structure of the sales organization, sales policies, selection of salespersons, and methods of compensation and motivation.

Ruffin

Fall, 3 credits

PHA 607 Behavioral Pharmacy

This course directs students towards an understanding, analysis and application of theories in organizational behavior, psychology, sociology and education as they apply to a range of problems and issues found within various work environments within the pharmaceutical industry and profession. Through lecture, reading, group work and analysis of case studies, students will be able to identify and apply relevant theory in order to solve problems that occur in organizational settings.

Lonie

Spring, 3 credits

PHA 613 Marketing Management

Designed to develop an understanding of the function and role of product management systems, including, among others, the following topics: product cycle analysis, preparing the annual marketing plan, financial tools for product management, sales coordination and product management, control of the product marketing plan.

Walton

Fall, 3 credits

PHA 614 Health Literacy

This course offers a problem-based approach to meeting the health information needs of consumers with low health literacy. Issues addressed are difficulties in sending or receiving written or spoken information containing either words, numbers, or graphs; ESL; non communicative consumers and health practitioners; and cultural disparities which affect communication.

Dolinsky, Lonie

On Occasion, 3 credits

PHA 633 Pharmaceutical Advertising and Promotion

Investigates the principles of advertising and sales promotion to the medical community. Course material examines each stage in the development of actual advertising programs and guides the student from the stated objectives in the product market plan through the various levels of creating, producing and issuing each promotional element (i.e., journal ads, direct to consumer advertising, sales/detail aids, sample packages, etc.) into a coordinated program. The student also studies the structural financial operation and business relationship of the medical advertising agency as an important marketing extension of the pharmaceutical product manager and/or advertising director.

Staff

Spring, 3 credits

PHA 644 Internship in Marketing Management

This course is designed for those graduate students who have an interest in employment opportunities within the healthcare industry at pharmaceutical companies, medical advertising agencies and other sites. The student works in an on-the-job setting on carefully planned work activities designed to provide a basic understanding of how the healthcare industry operates. A report on these work activities is required at the completion of the course. Pass-Fail only. **Staff**
On Occasion, 1-3 credits

PHA 645 Internship in Drug Regulatory Affairs

This course is designed for those graduate students who have an interest in employment opportunities in the pharmaceutical industry or government. The student works in an on-the-job setting on carefully planned work activities designed to provide a basic understanding of the drug regulatory environment, process and outcome. A report of these work activities is required at the completion of the course. **Staff**
Pass/Fail only.
On Occasion, 3 credits

PHA 651 Pharmaceutical Labeling, Advertising and Promotion

A comprehensive course which reviews prescription and OTC drug labeling, advertising and promotion regulations. Examines the development and clearance of labeling and advertising pieces (container labels, package inserts, journal ads, direct mail, visual aids, reminder advertising, etc.). Discussion of principles of Fair Balance, Brief Summary and Full Disclosure. Students will be required to prepare advertising and promotional pieces. The role of the regulatory affairs department, product manager, advertising agency, etc., will be discussed. Review of institutional advertising, preapproval advertising, prescription drug advertising to the consumer (PDAC), comparative advertising. **Islam**
Prerequisite: PHA 603
On Occasion, 3 credits

PHA 653 Seminar in Social and Administrative Sciences

Students generate solutions to current problems in pharmaceutical care, the pharmaceutical industry and public policy, and support their views with evidence that reflects concepts, principles, theories and philosophies from the social/behavioral/administrative sciences. Based upon their research, students will prepare written reports, give multimedia class presentations and conduct class discussions. **Staff**
Fall and Spring, 3 credits

PHA 654 FDA Regulation of Over-the-Counter Drugs, Medical Devices and Dietary Supplements

Provides the participants with an understanding of, and an appreciation for, the regulation of over-the-counter drugs, medical devices, cosmetics and animal health drugs as legislated by the Federal Food, Drug, and Cosmetics Act and its amendments and the Fair Packaging and Labeling Act. **Islam**
Prerequisite: PHA 603
Spring, 3 credits

PHA 655 Chemistry, Manufacturing and Controls (CMC) Regulatory Affairs

This course describes various aspects of CMC regulatory affairs as they relate to the development, approval and marketing processes for drugs in the US. Topics include: FDA vs. pharmaceutical industry viewpoints on CMC regulatory affairs; quality issues related to CMC regulatory affairs; organization of the CMC regulatory function and role of the CMC regulatory professional; CMC regulations and guidances; format, required content and scientific considerations for the CMC sections of INDs and NDAs for traditional dosage forms; and an overview of CMC requirements and considerations for other submissions (i.e. generics, biologics, animal drugs, drug master files, devices and international dossiers). **Pikulin**
Prerequisite: PHA 603
On Occasion, 3 credits

PHA 656 Current Enactments, Regulations and Guidances

In the last few years, there has been a plethora of new and revised congressional acts and FDA-administered rules and guidances towards the development and approval of drugs in the U.S. This course will focus upon these current requirements. There will be extensive discussion of the Food and Drug Administration Modernization Act (FDAMA); selected Safety, Efficacy and Quality International Conference on Harmonisation (ICH) Guidances; selected FDA Guidances prepared under the auspices of the various FDA Coordinating Committees; and selected Post-Approval Changes (PAC) Guidances. Current draft requirements and the resulting future regulatory direction will also be considered. **Pikulin**
Prerequisite: PHA 603
On Occasion, 3 credits

PHA 657 Principles and Practices of Regulatory Compliance and Enforcement

This course emphasizes the history, development, implementation, monitoring, operational procedures and audit techniques of investigation and enforcement. Enforcement issues and problems are addressed. **Torre**
Prerequisite: PHA 603
Spring, 3 credits

PHA 658 International Drug Regulatory Affairs

The increasing globalization of product development and marketing means that companies that manufacture and market products in many different countries must comply with an ever-increasing spectrum of laws and regulations. The borders that divide nations seem to be shrinking as the means of rapid communication increase. But the lack of regulatory consistency across the globe makes it extremely difficult for pharmaceutical manufacturer's to implement a globally acceptable product design. The purpose of this course is to provide an overview of global regulatory requirements for US and EU for product registration. Topics covered will include the understanding of the ICH (International Conference on Harmonization) and CTD (Common Technical Document) as well as some basic understanding of international product registration requirements. Following this course, students should be able to understand the fundamentals of global regulatory issues. **Islam**
On Occasion, 3 credits

PHA 659 Public Policy in Health and Pharmacy

This course will introduce students to the public policy process, especially as it relates to health care. Topics covered will include the theory and stages of the public policy process, public policy institutions at the State and Federal level, role of advocacy groups in public policy development, and an overview of contemporary issues in health care and public policy, including Medicare, Medicaid, drug safety, patient safety, health insurance reform, reimportation, and pharmaceutical pricing. Students will be expected to apply the principles taught to the analysis of a contemporary public policy issue and present their written analysis, findings and recommendations to the class. **Coster**
Spring, 3 credits

PHA 660 Mechanics of Preparing INDs and NDAs

This course provides an in-depth assessment and analysis of the requirements of the investigational new drug (IND) and new drug applications (NDA).

Component parts, appropriate format, assembly and submission of each is emphasized. **Islam, Torre**

Prerequisite: PHA 603

Fall, 3 credits

PHA 661 The Pharmaceutical Industry

This course provides a comprehensive view of the key activities in which major pharmaceutical companies are involved, e.g., research and development, pilot manufacturing, manufacturing and packaging, quality assurance, marketing, sales, distribution, regulatory affairs and pharmacy relations. **Pikulin**

Spring, 3 credits

ADMISSION

Eligibility

1. Holders of the baccalaureate degree, or its equivalent, from an accredited college or university are eligible to apply for admission. The program specializations in Pharmaceutics usually require an undergraduate degree in pharmacy, chemistry, biology or a related science specialty. Certain courses in these programs have specific undergraduate prerequisites.
2. The applicant must have an acceptable record in undergraduate studies (preferably a "B" average or better) as reflected in official transcripts of all colleges and universities attended. Attention is given to overall grade averages, grade trends during undergraduate study and areas of scholastic strength. Consideration is also given to professional accomplishments of the applicant since the time of completion of undergraduate studies.

Admissions Procedure

The applicant must forward the following to the Office of Admissions:

1. A completed application.
2. Application fee (non-refundable) of \$30.00.
3. A copy of official transcripts of all col-

leges and universities attended.

4. Three completed letters of recommendation.
5. Graduate Record Examination (GRE) Scores*

**The graduate Record Examination is required of applicants to the Ph.D. program, and recommended for applicants to the Master of Science programs. For information on GRE, contact the GRE Board in Princeton, New Jersey 08541-6000 www.gre.org.*

Notification of Acceptance

Students will be notified of the admissions decision shortly after all the necessary documents (application, transcript, official test score report and letters of recommendation) are received. Once a candidate is accepted, he or she is required to make a deposit of \$250.00 to reserve a place in the entering class. This deposit is applied to the first semester's tuition. It is not refundable should the student decide at a later date not to attend the Brooklyn Campus.

Student Classifications

Matriculated Students

Graduate students are matriculated when they meet all the conditions specified above. Upon approval of the Office of Graduate Studies, students become fully qualified candidates for the Master of Science degree.

Special Students

An applicant may be classified as a Special Student under any of the following conditions:

1. Potentially acceptable students may be granted conditional admission as a Special Student. They will be permitted to enroll for a maximum of 12 credits of required courses. These students must maintain a "B" average in their first 12 credits of work to be allowed to enroll for additional courses and be considered for matriculation.
2. Students holding advanced degrees and wishing to attend courses on a selective basis are classified as nonmatriculated. Such students are invited to apply and register for courses to keep current in their field of interest, to

enhance their professional advancement, or to foster personal enrichment.

In addition, students holding a bachelor's degree from accredited colleges and universities may be admitted as nonmatriculated if the course work is intended to help them in their jobs. Special Students must meet the same standards of admission as those admitted to degree candidacy.

Granting Special Student status for either technical or academic reasons does not obligate the College to give such applicants matriculant status. Admission of a Special Student to matriculant status will depend upon the quality of all of the student's credentials as well as performance in courses taken as a Special Student.

International Students

Applications are welcome from international students who hold the equivalent of a United States bachelor's degree. To be considered for admission, all foreign credentials must be submitted, including proof of secondary school graduation (Matriculation Examination results, etc.) and a copy of official university transcripts or mark sheets, to the Office of Admissions. All documents must be notarized and accompanied by translations.

Students for whom English is not a native language are required to take the Test of English as a Foreign Language, administered by the Educational Testing Service. Information on the examination can be obtained from the Service at Box 592, Princeton, New Jersey 08540, or Box 1025, Berkeley, California 94701. Proficiency in the English language is essential and a student who needs additional study in English may be required to take English courses for foreign students at Long Island University.

Applications from international students must be accompanied by a nonrefundable \$30.00 application fee and received no later than May 1 for the Fall semester and November 1 for the Spring semester. When credentials are complete and found to be satisfactory, the applicant will be required to submit a \$250.00 deposit and a certified statement of financial support. The deposit will be applied to tuition and is not refundable should the student decide not to attend the University. An I-20AB or IAP-66 form will be issued upon receipt of the deposit and statement of financial support. Students should not make plans to come to the United States until they have received the immigration form.

Health insurance coverage is compulsory for all international students and their dependents. Information pertaining to the health insurance coverage may be obtained from the Office of International Students, which assists students on campus.

Students holding F-1 (student) visas are required by law to be fully matriculated and be registered for at least nine credit hours per semester.

Students should be aware of tuition rates as well as of the relatively high cost of living in and around New York City, and come prepared to finance their education.

Advanced Standing

Graduate courses taken at other graduate schools prior to admission to the Arnold & Marie Schwartz College of Pharmacy and Health Sciences may be transferred for credit. Such courses may be used to meet requirements, provided the student requests the transfer of credit in writing at the time of application. Transfer credit must be in advanced work and is limited to six credits for courses with a grade of "B" or higher completed within the three-year period prior to admission to the College of Pharmacy. All transfer credits are subject to approval by the Associate Dean.

Re-admitted Students

Students who have not attended classes for one semester during the regular academic year (summer sessions not included), and who have not maintained matriculation but are desirous of resuming their studies, are required to file an application for re-admission with the Office of Admissions. Such students are required to re-enter under the existing admissions standards and program requirements of the College at the time of re-entry.

ACADEMIC REGULATIONS

Registration

When a student is first admitted to the Graduate Program, he or she is assigned a Program Director who is a member of the Graduate Faculty. Registration each semester takes place during the periods indicated in the academic calendar. All students must have their Program

Director sign their course registration form each semester. This procedure insures appropriate academic advisement on a continuing basis.

Maintenance of Matriculation

It is expected that students will fulfill the requirements for advanced degrees by registering over successive semesters. Degree candidates may find themselves unable to register for courses during one or more semesters, or to complete all course work because they are working on their thesis. To remain on an active status and to qualify for a degree under the requirements in effect when admitted, such students must register each semester by writing "Maintenance of Matriculation" on the registration form and paying a \$250 fee for each such semester. A student who fails to register under "Maintenance of Matriculation" will be classified as inactive. Re-admission will require the submission of a new application for admission and a review of the student's record and qualifications with respect to the requirements for admission in effect at the time of readmission.

Students serving in the Armed Forces of the United States maintain matriculation automatically during the time of their service. They are required, however, to inform the Office of Graduate Studies of the dates of their entrance into military service and termination of active duty.

Maintenance of matriculation without attending classes is limited to one year. Approval for extension of this time limit must be obtained from the Dean or a designated representative.

The above information on maintenance of matriculation does not apply to Ph.D. candidates who have begun work on their doctoral dissertation.

Withdrawal and Refund

Withdrawal from Courses

Students who fail to withdraw officially from a course by the date so indicated by the Office of Graduate Studies, and do not attend and/or meet the course requirements have, in fact, earned an "F," and will receive that grade designation. The grade "W" will be given to

students who are in compliance with official withdrawal procedures.

Students must obtain a Withdrawal Form from the Office of Graduate Studies and have this form signed by the instructor of the course(s) concerned.

A student who wishes to withdraw from the College should notify the Office of Graduate Studies in writing.

Otherwise, honorable dismissal will be withheld. No certificate or transcript of record will be granted, however, until all financial indebtedness is settled. If a student withdraws from the College prior to the completion of a semester, he or she must file the appropriate Withdrawal Form with the Registrar.

Withdrawal to Enter the Armed Forces

Students withdrawing to enter into the Armed Services should note carefully the following regulations outlining the position of the College with regard to such withdrawal:

1. Application for withdrawal in good standing must be made at the Office of the Registrar. The official date of withdrawal is the date on which the application is made.
2. Students may receive a proportionate refund.
3. Specific policies may be obtained from the Office of the Registrar.

Refunds

When a student withdraws, the University will refund tuition according to the schedule shown on pages following Tuition and Fees listings.

Registration, graduation and university fees are not subject to proration and are not returnable.

Date of withdrawal will be considered the day on which the student has completed all Withdrawal Forms and has submitted these forms to the Office of the Registrar.

A student may be dismissed at any time for misconduct of such a nature as to be prejudicial to the College. In the event of such dismissal, fees will not be refunded in whole or in part.

Grade-Point Average

The College's grade-point average is employed to determine the average grade status of a student. "A" corresponds to an index number of 4, "A-" to 3.67, "B+" to 3.33, "B" to 3, "B-" to 2.67, "C+" to 2.33, "C" to 2.0, "C-" to 1.67, "D" to 1.0, "F" to 0.

To ascertain scholastic average, divide the total number of quality points by the total number of credits completed. For example, if a student has a total of 90 quality points and has completed 30 credits, the grade-point average would be 3.0.

Repeating Courses

Students may repeat any course with the permission of their advisers. To repeat a course more than once, they must have permission of the appropriate Dean. Credit will be earned only once, and the second grade—whether higher or lower—will be computed in the student's average. After a student takes a course a second time, all grades except the first will be computed in the student's average.

Academic Standards

The College reserves the right to dismiss, at any time, a student whose academic record is unsatisfactory. To be in good academic standing, a student must make appropriate progress toward fulfilling all requirements of the graduate program (M.S. or Ph.D.) in which he/she is enrolled. Failure to do so will be cause for dismissal.

Academic probation is the initial official act for a student failing to make satisfactory progress. Students will be duly notified by the Associate Dean that they have been placed on probation.

A graduate student will be placed on probation for:

1. failure to maintain an overall cumulative grade-point average (GPA) of 3.0 and/or,
2. earning a grade of C+ (or less) in more than two courses (these courses may be repeated with the permission of the Division Director and Associate Dean).

A graduate student will be dismissed from the program for:

1. failure to rectify probationary status (i.e., obtaining GPA of 3.0) within two semesters.
2. receiving "F" grade in any course.
3. failure on the qualifying examination (for students in the Ph.D. program). Note: the student will be allowed to repeat the examination. However, if a student fails the examination more than once, he/she will be dismissed from the program.

4. failure on the comprehensive examination (for students in the M.S. program who choose the non-thesis option). Note: the student will be allowed to repeat the examination. However, if a student fails the repeat examination, he/she will be dismissed from the program.

Standards of Professional And Ethical Behavior

(See page 34.)

Grievance and Disciplinary Procedure

Students at the Brooklyn Campus may expect a scrupulous regard for their rights as students and individuals and should expect to be treated fairly and with courtesy by all members of the academic community. In any matter in which students feel that their rights have been violated, or in matters of serious dispute with members of the administration or faculty, students may avail themselves of the following formal grievance procedure:

1. The student will write out a clear statement of the grievance.
2. The student may submit this statement to the staff member involved. The student will be given a written response within a reasonable time.
3. If the student is not satisfied with the

response, or initially if preferred, the student may submit a statement to the appropriate division director or department head. The director will review the matter and provide the student with a written response within a reasonable time.

4. After a student receives a response from the Division Director, disciplinary committee may be convened upon the request of the student, the faculty member or the administration. This committee advises the Associate Dean regarding the matter; the Associate Dean's decision is then communicated to the concerned parties. The Associate Dean may initiate disciplinary proceedings upon request of a faculty member or Division Director.
5. If still not satisfied, the student may institute a formal complaint with the Dean of the School in which he or she is enrolled. The Dean will review the matter, hear the student and staff member where appropriate, and see that the proper action is taken. This procedure shall be a formal grievance procedure for the resolution of all student grievances and disciplinary matters, including those alleging actions prohibited by legislation.

GRADUATION REQUIREMENTS

Master of Science students may elect either a Thesis Option or Non-Thesis Option (see below). Doctoral students should consult the program for the Plan of Study (see page 50).



Thesis Option

1. Completion, with an average grade of "B" of the required curriculum in the designated area of specialization, consisting of a minimum of 24 credits in course work and 6 credits of research and thesis.
2. Completion of a Master's Thesis which demonstrates the candidate's ability to select, organize and present the results of investigations in his or her field of specialization. The following general information is intended for the student's guidance in the preparation of the thesis:
 - (a) The student should have completed at least 12 credits toward the degree before submitting a proposal.
 - (b) The student should obtain the latest copy of Supplementary Information and Suggestions Concerning the Master's Degree Thesis and Proposal from the Office of Graduate Studies.
 - (c) The approval of the Division Director must be obtained for the thesis after the submission of the proposal.
 - (d) The sponsoring committee must consist of three members of the graduate faculty of whom two must be from the full-time graduate faculty. The Chair of the committee may be selected by the student or appointed by the Division Director.
 - (e) The Chair of the sponsoring committee supervises the student during the period of thesis preparation.
 - (f) Upon completion of the thesis all members of the sponsoring committee must read and approve the thesis before acceptance.
 - (g) The subject of the thesis should be of significance and the completed manuscript should be representative of a high degree of scholarly attainment.
 - (h) Students must conform to the submission dates in the thesis proposal outline (see b, above) and the dates given in the calendar of this bulletin.
 - (i) The student is required to make an oral defense of the thesis before the sponsoring committee.

Non-Thesis Option

1. Completion with an average grade of "B" of the required curriculum in the designated area of specialization, consisting of a minimum of 33 credits of course work.
2. Passing a written comprehensive examination. This examination will be given twice annually, generally in December and May. Dates may be obtained from the Office of Graduate Studies.

Note: Students should refer to the information on individual Master of Science programs in the Graduate Curriculum section of this bulletin (pages 49-52) for specific information and course work requirements in each area of specialization, and for information regarding any other degree requirements that may pertain to their areas of specialization.

Residency Requirements

Students are expected to complete all of their courses at the Arnold & Marie Schwartz College of Pharmacy and Health Sciences of Long Island University. Students may, however, receive a maximum of six transfer credits from other institutions. Permission to take such courses at other institutions while in residence at the College must be obtained from the Division Director and the Associate Dean.

The M.S. curricula are projected for completion within a two-year period.*

For the period of study for the doctoral programs, students should consult the program (pages 49-50).

Nine credits are considered a full-time load for academic purposes. Full-time enrollment status for graduate students for all federal and state financial aid programs is defined as 12 credits per semester. Permission of the Division Director is required to carry more than 12 credits.

**While all academic and other requirements for the degree of Master of Science can be completed in two semesters and summer work, the maximum allowable time for the completion of all requirements and the awarding of the degree is five years from the date of first matriculation (exclusive of time spent in the armed forces), unless the Associate Dean approves an extension. Any course outside the time limit will not count*

as credits toward the degree unless approved in writing by the appropriate Division Director and Associate Dean.

Changes on Academic Records

Students have until the time of their graduation to have changes made on their academic records. Once a student has graduated, the academic record is frozen and cannot be changed retroactively.

Note: These are the Tuition and Fee and Withdrawal pages for the graduate section of the Pharmacy bulletin, 2004-2006. They directly precede the graduate financial aid section.

GRADUATE PROGRAM TUITION AND FEES

Special Note: Fee schedules below are the prevailing rates for the 2006-2007 academic year. Rates for 2007-2008 will be announced on or about June 1, 2007.

Tuition, per credit per semester	\$917.00
Ph.D. in Pharmaceutics (per credit, per semester)	917.00
Application fee (nonrefundable)	30.00
Deposit fee (nonrefundable)	100.00
International students	250.00
Deposit fee for Residence Hall (nonrefundable)	150.00
University fee, per semester (\$15.00 nonrefundable)	
Program of 12 or more credits.....	500.00
Program of 4.1 to 11.9 credits.....	220.00
Program of 4 credits or less	105.00
Student Activity fee, per semester	
Program of 9 or more credits.....	65.00
Program of 4.1 to 8.9 credits.....	55.00
Program of 4 credits or less.....	No Fee
Flex Dollar Program (students initially registered for 9 or more credits. Subsequent program changes do not cancel the membership, if the registration falls below 9 credits.)	35.00
Laboratory and special course fee (see course descriptions)	
Computer access may require appropriate fees commensurate with utilization and the nature of the course.	
Audit fee (half tuition and full fees).....	458.50
Ph.D. in Pharmaceutics (half tuition and full fees)	458.50
Transcript of record	
A fee of \$5.00 is charged for each transcript up to ten and \$1.00 each for the eleventh and further transcripts issued at the same time.	
I.D. card (after first)	10.00
Late registration.....	10.00
Late graduation application	25.00
Late Payment Fee	
First late payment fee	*50.00
Second late payment fee	*50.00
Deferred final examination (per exam)	
(maximum \$60.00)	20.00
Program change fee	15.00
Comprehensive examination fee	15.00
Maintenance of matriculation fee, per semester	250.00
Reinstatement of cancelled registration	100.00
Delayed registration fee.....	200.00
Residence Hall room, per semester,	
per student.....	2,010.00-4,000.00
Suite, per semester, per student	2,900.00-4,100.00
Apartment, per semester, per student.....	3,540.00-5,300.00
Meal Plan, per semester	935.00-1,690.00
Required of all resident students occupying a Residence Hall room. Students must opt for any one of four available plans.	
Optional for resident students occupying an apartment.	
Health insurance (compulsory for domestic resident students, all international students, and students assigned field work in a health core curriculum). Charges are billed for an	

annual plan in the Fall semester, covering the policy period 8/15/06-8/15/07. Charges are not reduced if a student does not reside in the Residence Hall for the Spring semester or is no longer in a health core curriculum, since coverage continues to be effective over the full policy period.

Rates for the Annual Plan:

International students	1,255.00
Domestic students	700.00
Health core curriculum students.....	450.00

Rates for the Spring semester (newly enrolled students)

covers the policy period 1/1/07-8/15/07:

International students	779.00
Domestic students	435.00
Health core curriculum students.....	281.00

Rates for the Summer Semester, covers the policy period

5/15/07-8/15/07.

International students	321.00
Domestic students	180.00
Health core curriculum students.....	117.00
Malpractice Insurance fee	12.00
Digitizing the master's thesis	45.00
Digitizing the dissertation	55.00
Thesis binding – master's degree.....	20.00
Thesis binding– Ph.D.....	60.00

Returned Check Fee

\$100.00 or less	25.00
More than \$100.00	50.00

(Repayment of returned checks and all future payments to the University from a student who has presented a bad check must be tendered via a bank check, certified check, money order or MasterCard, Visa or Discover Card.)

Students failing to fulfill all non-academic requirements (tuition, fees, library obligations, etc.) will be denied subsequent services, including but not limited to withholding of diplomas, transcripts, letters of certification, or licensure eligibility until these requirements are met.

**Students are expected to clear their bills before the start of classes. In the event that a student fails to do so, late payment fees will be assessed. Registered students who have not cleared the Bursar by the due date indicated on the bill will be obliged to pay the late payment fee of \$50.00. Bills not cleared by mid-point of semester will be assessed an additional late fee of \$50.00. If a student's registration is cancelled, the student will be obliged to pay a reinstatement fee of \$100.00 plus the late payment fees. If the reinstatement takes place one year or more after the semester has ended, current tuition rates will be charged. Any student who deliberately fails to register, but attends classes with the intention of registering late in the term, will be responsible for paying the delayed registration fee of \$200.00. If the registration takes place one year or more after the semester has ended, current tuition rates will be charged.*

Time and Method of Payment

All fees and the entire tuition for each semester are due and payable in full at the time of registration. All payments must be made either by check or money order drawn in favor of Long Island University, or by VISA, MasterCard, or Discover Card. The College reserves the right to change the fees herein stated at any time without notice.

Withdrawal

A student who wishes to withdraw from the College should follow directions outlined in the withdrawal form obtained from the Registrar (Refer to Withdrawal Policies in Administrative Regulations). Otherwise, honorable dismissal will be withheld. Drops or withdrawals will not be permitted after the date published by the Registrar in the Academic Calendar. No certificate or transcript of record will be granted, however, until all financial indebtedness is settled. When a student withdraws, the University will refund tuition and fees as indicated in the following schedule.

Long Island University Institutional Refund Schedule

<i>Time of Withdrawal</i>	<i>Fall/Spring Semester</i>	<i>Summer 5-6 Week Session</i>
Cancellation prior to beginning of semester or session	Complete refund except for deposit and applicable registration fee.	
Cancellation after beginning of semester or session	No refund of Dining Club fee.	
During:		
1st calendar week	90%	60%
2nd calendar week	75%	25%
3rd calendar week	50%	No refund
4th calendar week	25%	
After 4th week	No refund	
<i>Time of Withdrawal</i>	<i>7-8 Week Session</i>	<i>10-Week Session</i>
Cancellation prior to beginning of semester or session	Complete refund except for deposit and applicable registration fee.	
During:		
1st calendar week	70%	80%
2nd calendar week	30%	60%
3rd calendar week	No refund	25%
4th calendar week		No refund
<i>Time of Withdrawal</i>	<i>3-Week Session</i>	
Cancellation prior to beginning of session	Complete refund except for deposit and applicable registration fee.	
During:		
1st calendar week	60%	
2nd calendar week	No refund	
<i>Time of Withdrawal</i>	<i>Weekend College</i>	

Cancellation prior to beginning of semester or session Complete refund except for deposit and applicable registration fee.

Prior to:
 2nd weekend 70%
 3rd weekend 30%
 Following 3rd weekend No refund

Time of Withdrawal Short-Term Institutes (3 weeks or less)

Cancellation prior to beginning of first class Complete refund except for deposit and applicable registration fee.

Up to mid-point of first class 80%
 Following mid-point of first class No refund

Time of Withdrawal Continuing Studies

Cancellation prior to beginning of first class Complete refund except for deposit and applicable registration fee.

Prior to start of second class 80%

FINANCIAL AID

A limited amount of financial aid is available through appointments as Graduate Assistants, Laboratory Associates, or Teaching Fellows. All appointments are made on a competitive basis.

1. Graduate Assistants: Twelve-month appointments, 15 hours per week of appropriate assignments, \$6,000 stipend, plus remission of tuition (18 credits per year).
2. Graduate Tuition Scholars: Twelve-month appointments, nine hours per week of appropriate assignments, no stipend, plus remission of tuition (18 credits per year).
3. Laboratory Associates: Twelve-month appointments, 35 hours per week, \$12,000-12,500 salary, plus remission of tuition (18 credits per year; 24 credits per year for Ph.D. candidates in Pharmaceutics).
4. Teaching Fellows: Twelve-month appointments, 15 hours per week, \$13,500 salary, plus remission of tuition (24 credits per year).

In addition, the following two fellowships are available:

Herman S. and Philip S. Lasdon Research Fellowship

Established by the Lasdon Foundation, in memory of Herman S. and Philip S. Lasdon, graduates of the Class of 1919, the Fellowship provides research support for a graduate student in pharmaceuticals, social and administrative sciences or drug information. Twelve-month appointment, 35 hours per week. The Fellow also receives a stipend (\$22,000 per year) and tuition remission (18 credits per year).

Arthur M. Sackler Fellowship

Established by the Laboratories for Therapeutic Research through the generosity of the Sackler family, the Fellowship provides thesis research support for a student pursuing graduate studies in the pharmaceutical sciences. The Fellow also receives a stipend and tuition remission.

Full-Time Status

To be eligible for the full benefits of the federal and state financial aid programs, graduate students must register for 12 credits or more per semester. Part-time students registered for at least 6 credits may apply for the Federal Direct Student Loan Program described in this section.

All applicants must electronically complete the Free Application for Federal Student Aid (FAFSA) or the Renewal FAFSA, which is available over the Internet at www.fafsa.ed.gov.

Graduate students who wish to apply for in-school deferments on loans should contact their lender (for loans under the FFELP/Stafford Loan Program) or the federal government's Loan Origination Center (for the Federal Direct Student Loan Program), in order to determine if they qualify for deferment benefits. Various loans require full-time enrollment status, and some allow deferments based on part-time enrollment. Generally, students do not begin repayment for federal student loans until six months after graduation or enrollment of less than six credits per semester. However, repayment provisions may vary with each type of loan.

Students are urged to check with agencies administering their loans regarding any of the repayment provisions that govern deferment, cancellation and special benefits as they enter repayment phases of their borrowing. Repayment information and brochures are available in print or on-line, at the Office of Student Financial Services' Homepage at www.brooklyn.liu.edu/financialaid.

Federal Assistance

All candidates for financial aid administered by the University or the federal government (Federal Perkins Loans, Health Professions Students Loans, Federal Work Study/America Reads, Federal Direct Student Loans) must electronically complete the Free Application for Federal Student Aid (FAFSA) or the Renewal FAFSA, which is available over the Internet at www.fafsa.ed.gov. Graduate recipients of Title IV financial aid funding must maintain at least part-time student status (six credits per term) in order to receive the maximum benefits from these programs. Students who withdraw and drop their registration below this status must have their current and future aid eligibility redetermined.

Federal Perkins Loans

U.S. citizens or permanent residents who are enrolled as full time students may apply. Based on financial need, loans range from \$200 to \$4,000 annually (depending on funding levels). This loan is repayable in installments beginning six months after graduation, or termination of studies, or enrollment in less than six credits per semester, at an interest rate of 5%. Cancellation benefits are available.

Health Professions Student Loans (HPSL)

This loan is available to full-time students majoring in Pharmacy, who are U.S. citizens or permanent residents exhibiting financial need, and who can submit parental income information. Loans range from \$200 to \$6,000 annually (depending on funding levels) and are repayable one year after termination of at least half-time studies or immediately upon change of major, at an interest rate of 5%. Average repayment requires a minimum of \$45 per month for a maximum of ten years. Deferment benefits of up to three years are available for those on Active Duty as members of uniformed service (Army, Navy, Marine Corps, Air Force, Coast Guard), the National Oceanic and Atmospheric Administration Corps and the U.S. Public Health Service. Also eligible are volunteers in the Peace Corps. Deferments are also available for advanced professional training in internship and residency programs, full-time training beyond the first professional degree, or training fellowships by hospitals which are affiliated with health professional schools. Further information is available upon request.

Federal Work-Study Programs (FWSP)

Through this program, part-time on campus employment is available to full-time graduate students exhibiting financial need, who are U.S. citizens or permanent residents. Rules and regulations of the program are outlined in the Federal Work-Study Manual available in the Office of Career Services.

Academic Standards for Federal Programs

Students receiving Title IV financial aid assistance (Federal Direct Student Loans, Federal Perkins Loans, Federal Work Study/America Reads) are required to meet standards of satisfactory progress toward their degree objective. The standards in the chart on p.62 are in effect for the receipt of Title IV assistance and State Student Incentive Grant Programs.

William D. Ford Federal Direct Student Loan Program

Students enrolled for a minimum of 6 credits who are U.S. citizens or permanent residents may borrow from the Federal Direct Student Loan Program. There are two types of loans offered in this program, subsidized and unsubsidized. Subsidized loans are based on financial need and delay repayment of principle and interest until six months after graduation or termination of at least part-time studies. Unsubsidized loans require payment of interest while the student is in school.

The Federal Direct Student Loan Program offers loans at a very low variable interest rate that will not exceed 8.25%. The amounts borrowed each year are linked to the student's academic classification, and there are aggregate loan limits that place a cap on cumulative borrowing for all the years of attendance. For subsidized loans, the following reflects these annual and cumulative loan limits:

	<i>Annual Loan Limit</i>	<i>Aggregate Loan Limit</i>
Graduate	\$8,500	
Combined Limits for Graduate and Undergraduate	\$65,500	

The unsubsidized loan program offers the following annual and aggregate loan limits:

	<i>Annual Loan Limit</i>	<i>Aggregate Loan Limit</i>
Graduate and Professional	\$10,000	
Combined Graduate and Undergraduate Total		\$73,000

Unsubsidized loans begin repayment within 60 days after the final disbursement of the loan, unless the borrower requests and is granted an in-school deferment. A student may not borrow if the estimated cost of attendance minus financial aid shows no need.

Students whose registration drops below part-time (6 credits), become ineligible for any portion of the loans previously described, and funds are returned to the federal government. The Office of Student Financial Services, based on information from the FAFSA or Renewal FAFSA, and any documentation requested, determines eligibility for all loans in this program.

Further detailed information is available from the Office of Student Financial Services and from their website at www.brooklyn.liu.edu/finaid.

**Full-Time Master's Candidates
Length of Program—4.5 Years
Half-Yearly Increments**

Year Equivalents	0.5	1	1.5	2	2.5	3	3.5	4
Number of Credits per Half Year	4	4	4	4	5	5	5	5
Cumulative Credits	4	8	12	16	21	26	31	36

In addition to maintaining the yearly increments of credits earned, students must also satisfy the average requirements as detailed in this University bulletin: students in the Faculty of Business, Public Administration and Information Sciences must maintain a 2.5 grade-point average; all other students who have earned fewer than 13 credits must maintain a 2.5 grade-point average; all other students who have earned 13 credits or more must maintain a 2.0 grade-point average.

Addendum for Chart

1. Title IV probation status will be considered in the following manner:
 - a) A review is made at the end of each semester to determine if a student's average is satisfactory.
 - b) A review is made at the end of the Spring semester of each year for determination of work completed.
 - c) If a student has failed to meet the minimum requirements, the student is placed on probation for the following year.
 - d) At the end of the following year, after the Spring semester, a determination is made, and if progress (as defined) toward minimum standards has still not been made, the student will lose eligibility for the third year.
 - e) Progress toward the minimum standards is defined as:
 - 1) completing the minimum number of credits required for that yearly or cumulative increment, or

- 2) showing improvement in the grade-point average.
2. "P" grades will be reviewed for grade-point average requirements by the Dean.
3. "U," "F," "W," "WF," "INC," "ABS," "UW," "NGR," "AUD" grades do not count toward successful completion requirements. Repeated courses count only once toward credits earned.
4. Part-time students should simply prorate the requirements which appear on the full-time chart.

A student must conform to the standards of good academic standing published in this University bulletin. Records of a student who is on probation, or who fails to make adequate progress toward his or her degree, are subject to review for mitigating circumstances based upon professional judgment. A student remains in good standing and eligible to receive Title IV funds until he or she is declared ineligible. The determination will be made at least at the end of each academic year.

**Standards of Satisfactory Academic
Progress for the Purpose of Determining
Eligibility for State TAP Awards
Graduate Chart**

Before being certified for this TAP payment, a student must:	1st Payment	2nd Payment	3rd Payment	4th Payment	5th Payment	6th Payment	7th Payment	8th Payment
1. Have earned this minimum number of credits	0	6	12	18	30	45	60	70
2. Have earned this minimum cumulative grade-point average	0	.6	1.2	1.8	2.5	2.5	2.5	2.5
3. Have completed in the previous term this minimum number of credits without withdrawals	0	6	6	9	9	12	12	12

STATE ASSISTANCE

Tuition Assistance Program (TAP)

TAP funding is available to full-time (12 credits per term) graduate students who are U.S. citizens or permanent residents, and who have been New York State residents for at least one year. Awards are based on the net taxable New York State income of the previous fiscal year. Recipients of TAP funding are subject to regulations governing satisfactory academic progress and program pursuit. The above chart outlines these requirements. Lines 1 and 2 of the chart pertain to the satisfactory academic progress requirements; line 3 pertains to the program pursuit requirement. Repeat courses (the registration of a class that has already met the student's degree requirements) may not count towards the minimum enrollment of 12 credits for full-time status. Additional information or clarification is available in publications available in the Office of Student Financial Services.

APPROVED PROGRAMS - BROOKLYN CAMPUS

New York State Education Department Inventory of Registered Programs

Enrollment in other than registered or otherwise approved programs may jeopardize a student's eligibility for certain student aid awards.

Richard L. Conolly College of Liberal Arts & Sciences

Major	Hegis Code	Degree
Biology	0401	BS, MS
Adolescence Urban Education: Biology	0401	BS
Middle Child & Adolescence Urban Education: Biology	0401.01	BS
Biochemistry	0414	BS
Media Arts	0601	BA
Journalism	0602	BA
Bilingual Extension – Teachers of Hearing Handicapped	0815	Adv. Cert.
Teacher of Students with Speech & Language Disability	0815	BS, MS
Teacher of Visual Arts in Urban Schools	0831	BFA
Music Education in Urban Schools	0832	BS
Bilingual Teachers of Students with Speech & Language Disabilities	0899.50	MS
Studio Art	1002	BFA
Music – Applied Music	1004	BA
Jazz Studies	1004	BA
Music (Jazz Studies)	1004	BFA
Music – Music Theory	1004.10	BA
Dance	1008	BFA, BS
Dance Education in Urban Schools	1008	BS
Computer Art	1009.00	BFA
Media Arts	1009	MA
Visual Arts	1099	BA
New Media Art and Performance	1099	MFA
Modern Languages –French, German, Spanish	1101	BA
Adolescence Urban Education: Spanish	1105.01	BA
Middle Childhood & Adolescence Urban Education: Spanish	1105.01	BA
Communication Sciences and Disorders	1220	BS, BS/MS
Speech-Language Pathology	1220	BS/MS, MS
Medical Technology	1223	BS
Cytotechnology	1223	BS
Nuclear Medicine Technology	1299	BS
English	1501	BA, MA
Middle Child & Adolescence Urban Education: English	1501.01	BA
Adolescence Urban Education: English	1501.01	BA
Speech	1506	BA
Philosophy	1509	BA
Mathematics	1701	BS
Middle Child & Adolescence		

Urban Education: Mathematics	1701	BS
Adolescence Urban Education: Mathematics	1701.01	BS
Physics	1902	BS
Chemistry	1905	BS, MS
Middle Child & Adolescence Urban Education: Chemistry	1905.01	BS
Adolescence Urban Education: Chemistry	1905.01	BS
Psychology	2001	BA, MA
Clinical Psychology	2003	Ph.D.
Social Work	2104	BA, MSW
Social Science	2201	MS
Middle Childhood & Adolescence Urban Education: Social Studies	2201.01	BA
Adolescence Urban Education: Social Studies	2201.01	BA
Anthropology	2202	MA
Economics	2204	BA, MA
History	2205	BA
Political Science	2207	BA, MA
Sociology-Anthropology	2208	BA
Sociology	2208	MA
United Nations	2210	Adv. Cert.
Urban Studies	2214	MA
Interdisciplinary Major	4901	BA, BS
General Science	4902	BS
Humanities	4903	BA, BS
Social Science	4903	BA, BS
Human Services	5506	Cert.
Social Science	5622	AA
Science	5649	AA
Humanities	5649	AA

School of Business, Public Administration and Information Sciences

Major	Hegis Code	Degree
Accounting	0502	BS, MS, BS/MS, MBA
Taxation	0502.10	MS
Business Finance	0504	BS
Business Management	0506	BS
Business Administration	0506	MBA, Adv. Cert.
Integrated Information Systems	0507	BS
Marketing	0509	BS
Human Resources Management	0515	MS
Computer Science	0701	BS, MS
Health Administration	1202	MPA
Not-for-Profit Management	2102.00	Adv. Cert.
Public Administration	2102	MPA

Gerontology	2104.00	Adv. Cert.
Accounting	5002	Cert.
Business Administration	5004	AAS
Computer Science	5101	Cert.

School of Education

Major	Hegis Code	Degree
Adolescence Urban Education: Biology	0401	BS
Middle Child & Adolescence Urban Education: Biology	0401.01	BS
Adolescence Urban Education: Biology 7-12 (Noncert)	0401.01	MSED
Adolescence Urban Education: Biology 7-12 1st Initial/Internship	0401.01	MSED
Adolescence Urban Education: Biology 7-12 2nd Initial	0401.01	MSED
Childhood Urban Education Childhood/Early Childhood Urban Education: 1st Initial /Internship	0802	BS
Childhood Urban Education: 2nd Initial	0802	MSED
Childhood Urban Education: 1st Initial /Internship	0802	MSED
Childhood Urban Education (Noncert)	0802	MSED
Childhood/Early Childhood Urban Education 2nd Initial	0802	MSED
Childhood/Early Childhood Urban Education (Noncert)	0802	MSED
Inclusive Childhood Education & Special Education in Urban Settings	0802/0808	BS/MSED
Higher Education Administration	0805	MA
Special Education	0808	MSED
Teaching Students with Disabilities: Middle Childhood	0808	MSED
Teaching Students with Disabilities: Middle Childhood Non-cert	0808	MSED
Teaching Urban Adolescents with Disabilities (Noncert)	0808	MSED
Teaching Urban Adolescents with Disabilities 1st Initial/Internship	0808	MSED
Teaching Urban Adolescents with Disabilities 2nd Initial	0808	MSED
Teaching Urban Children with Disabilities (Noncert)	0808	MSED
Teaching Urban Children with Disabilities 2nd Initial	0808	MSED
Teacher of Urban Children with Disabilities 1st Initial /Internship	0808	MSED
Bilingual Ext – Teacher of Speech and Hearing Handicapped	0815	Adv. Cert.
Early Childhood Urban Education	0823	Adv. Cert.
School Counselor	0826.01	MSED
School Psychologist	0826.02	MSED

Educational Leadership	0828	Adv. Cert.
Teaching Literacy 5-12 Urban Settings	0830	MSED
Teaching Literacy B-6 & 5-12 Urban Settings	0830	MSED
Teaching Literacy B-6 Urban Settings	0830	MSED
Teaching Literacy B-6	0830	Adv. Cert.
Teaching Literacy 5-12	0830	Adv. Cert.
Teacher of Physical Education in Urban Schools	0835	BS
Physical Education (Non-Cert.)	0835	BS
Bilingual Education	0899	Adv. Cert.
Bilingual Education in Urban Settings	0899	MSED
Educational Technology for the Learning Sciences	0899.20	MS
TESOL – Alt. Cert.	0899.50	MSED
Childhood Urban Education Alt. Cert.	0899.50	MSED
Adolescence Urban Education Alt. Cert.	0899.50	MSED
Bilingual extension – (Trans B) Alt. Cert	0899.50	Adv. Cert.
Special Education 1-6 (Trans B) Alt. Cert.	0899.50	MSED
Teaching Adolescents with Disabilities, Alt. Cert.	0899.50	MSED
Teaching Students with Disabilities: Middle Childhood, Alt. Cert.	0899.50	MSED
Adolescence Urban Education: Spanish	1105.01	BA
Middle Childhood & Adolescence Urban Education: Spanish	1105.01	BA
Middle Childhood & Adolescence Urban Education: English	1501.01	BA
Adolescence Urban Education: English	1501.01	BA
Adolescence Urban Education: English 7-12 1st Initial /Internship	1501.01	MSED
Adolescence Urban Education: English 7-12 (Noncert)	1501.01	MSED
Adolescence Urban Education: English 7-12 2nd Initial	1501.01	MSED
TESOL (Non-certification)	1508	MSED
TESOL 1st Initial /Internship	1508	MSED
TESOL 2nd Initial	1508	MSED
Middle Child & Adolescence Urban Education: Mathematics	1701	BS
Adolescence Urban Education: Mathematics	1701.01	BS
Adolescence Urban Education: Math 7-12 1st Initial/Internship	1701.01	MSED
Adolescence Urban Education: Math 7-12 (Noncert)	1701.01	MSED
Adolescence Urban Education: Math 7-12 2nd Initial	1701.01	MSED
Middle Child & Adolescence Urban Education: Chemistry	1905.01	BS
Adolescence Urban Education: Chemistry	1905.01	BS
Adolescence Urban Education: Chemistry 7-12 2nd Initial	1905.01	MSED
Adolescence Urban Education: Chemistry 7-12 (Noncert)	1905.01	MSED

Adolescence Urban Education Chemistry 7-12		
1st Initial/Internship	1905.01	MSED
Mental Health Counseling	2104.10	MS
Family Counseling	2104.10	Adv. Cert.
Alcoholism Counseling	2104.10	Adv. Cert.
Middle Child & Adolescence Urban Education: Social Studies		
	2201.01	BA
Adolescence Urban Education: Social Studies		
	2201.01	BA
Adolescence Urban Education: Social Studies 7-12		
1st Initial /Internship	2201.01	MSED
Adolescence Urban Education: Social Studies 7-12		
2nd Initial	2201.01	MSED
Adolescence Urban Education: Social Studies 7-12 (Noncert)		
	2201.01	MSED

School of Health Professions

Major	Hegis Code	Degree
Advanced Athletic Training & Sports Sciences	0835	MS
Health Sciences	1201	BS, MS
Occupational Therapy	1208	BS/MS
Physical Therapy	1212	BS/MS, MS, DPT
Respiratory Care	1299	BS
Community Health	1299	MS
Physician Assistant	1299.10	BS
Sports Science	1299.30	BS
Athletic Training & Sports Sciences	1299.30	BS/MS

School of Nursing

Major	Hegis Code	Degree
Nursing	1203	BS
Geriatric Nurse Practitioner	1203.10	MS
Adult Nurse Practitioner	1203.10	MS, BS/MS
Executive Program for Nursing and Health Care Management		
	1203.10	MS, BS/MS
Family Nurse Practitioner	1203.10	MS
Adult Nurse Practitioner	1203.12	Adv. Cert.
Education for Nurses	1203.12	Adv. Cert.
Family Nurse Practitioner	1203.12	Adv. Cert.
Geriatric Nurse Practitioner	1203.12	Adv. Cert.

Arnold & Marie Schwartz College of Pharmacy and Health Sciences

Major	Hegis Code	Degree
Pharmacology/Toxicology	0409	MS
Pharmacy Administration	1211	MS
Pharmaceutics	1211	MS, PHD
Drug Regulatory Affairs	1211	MS
Pharmacy	1211	PharmD

Global College (formerly Friends World Program)

Major	Hegis Code	Degree
Global Studies	2210.00	BA
Friends World Program of Long Island University	4901.00	BA



ARNOLD & MARIE SCHWARTZ COLLEGE OF PHARMACY AND HEALTH SCIENCES FACULTY

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Brooklyn Campus Map and Travel Directions

Subway

The Brooklyn Campus of Long Island University is served by all **subway lines**.

IRT: 4 or 5 trains (Lexington Avenue Line) or the 2 or 3 trains (Seventh Avenue Line) to Nevins Street Station

BMT: B, M, Q, or R trains to DeKalb Avenue Station

IND: A, C, or G trains (Eighth Avenue Line) to Hoyt-Schermerhorn Street Station

Train

The Flatbush Avenue terminal of the **Long Island Rail Road** is four blocks away.

Automobile

From Manhattan – via Manhattan Bridge – proceed along Flatbush Avenue Extension, turn left on Myrtle Avenue, right on Ashland Place and proceed two blocks to DeKalb Avenue and turn right. The Campus is on your right at the corner of DeKalb and Flatbush avenues.

Via Brooklyn Bridge – proceed along Adams Street, make left turn onto Tillary Street and keep right; after crossing Flatbush Avenue Extension bear right onto Navy Street, which becomes Ashland Place; proceed two blocks and turn right on DeKalb Avenue. The Campus is on your right at the corner of DeKalb and Flatbush avenues.

From Queens—Take the Brooklyn-Queens Expressway west to the Tillary Street Exit. Follow Tillary Street to Flatbush Avenue. Make a left turn onto Flatbush Avenue. The Brooklyn Campus is on the corner of Flatbush and DeKalb Avenues.

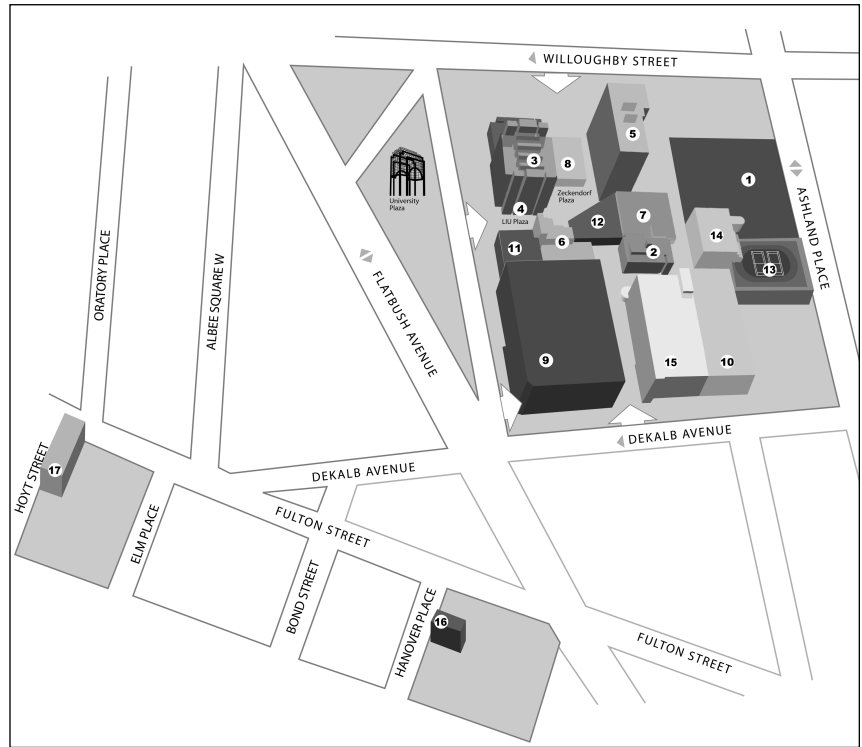
From Staten Island or Brooklyn—Take the Brooklyn-Queens Expressway east to Cadman Plaza West. Follow Cadman Plaza West to Tillary Street. Turn left on Tillary Street, then right on Flatbush Avenue. The Brooklyn Campus is on the left.

To return to Manhattan via the Manhattan Bridge—proceed on DeKalb Avenue and turn right on Flatbush Avenue to the Manhattan Bridge.
– via the Brooklyn Bridge, proceed on DeKalb Avenue, turn right on Flatbush Avenue then left on Tillary Street. The entrance to the Brooklyn Bridge will be on your right.

To return to the Brooklyn-Queens Expressway Queens-bound—Take Flatbush Avenue to Tillary Street. Turn right on Tillary Street and then stay to the left. Enter ramp for Brooklyn-Queens Expressway.

To return to the Brooklyn-Queens Expressway Brooklyn-bound—Take Flatbush Avenue to Tillary Street. Turn left on Tillary Street to Cadman Plaza West. Make a right turn on Cadman Plaza West. Bear left to enter the Brooklyn-Queens Expressway.

Municipal parking is available on Flatbush Avenue, directly across from the University.



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|----------------------------------------------------------------------|---------------------------------------------|
| 1 Athletic Fields | 8 LIU Bookstore |
| 2 Arnold and Marie Schwartz College of Pharmacy and Health Sciences | 9 Metcalfe Hall/Schwartz Athletic Center |
| 3 Arnold and Marie Schwartz Hall of the Arts and Humanities | 10 Parking Garage |
| 4 Kumble Theater for the Performing Arts/Humanities Building Gallery | 11 Student Union Building |
| 5 Conolly Residence Hall | 12 Triangle Theater |
| 6 Jeanetter & Edmund T. Pratt, Jr. Center for Academic Studies | 13 Wellness, Recreation and Athletic Center |
| 7 Library Learning Center | 14 Wet Lab |
| | 15 Zeckendorf Health Sciences Center |
| | 16 9 Hanover Place |
| | 17 1 Hoyt Street |



Policy of Nondiscrimination

Long Island University does not discriminate on the basis of sex, sexual orientation, race, color, creed, national origin, religion, age, handicap or political belief, in any of its educational programs and activities, including employment practices and its policies relating to recruitment and admission of students. Additionally, Long Island University takes affirmative action to recruit applicants from among women, members of protected minority groups, handicapped individuals and veterans, including disabled veterans and Vietnam-era veterans.

Students with Various Types of Disabilities

Students with disabilities who may require individually designed accommodations on the Brooklyn Campus are encouraged to contact the Special Educational Services Program for assistance in resolving any school-related difficulties. Located on the lower level of the Pharmacy Building, the program serves students with visible and nonvisible disabilities. Call (718) 488-1044 for further information.