



## A Course of Study for **PRE-PHARMACY**

Pharmacists prepare, compound, and dispense medicines prescribed by doctors, veterinarians, and dentists. They advise doctors, veterinarians, and other prescribers on the proper selection and effect of drugs. Additionally, pharmacists learn to recognize and classify hundreds of medicines.

Pharmacists must graduate from a program accredited by the American Council of Pharmaceutical Education. Most schools require a pre-pharmacy curriculum emphasizing mathematics and basic sciences, such as chemistry, biology, and physics. Pharmacists must also be licensed, which requires graduation from a college of pharmacy. The curriculum must contain at least 3200 hours of course work and 1000 hours of practical experience. Licensed pharmacists must also satisfactorily complete written and practical examinations given by the Board.

PhamCAS is a central online application center. The website provides useful information including a directory of all United States pharmacy schools, with links to information: [www.pharmacas.org](http://www.pharmacas.org).

### **PRE-PHARMACY REQUIREMENTS**

Although not required for application to pharmacy school, very few applicants are accepted who do not have a Bachelor's degree. It is becoming increasingly crucial for successful pharmacy school applicants to have direct work or volunteer experience in pharmacy. Excellent written and verbal communication skills are essential.

### **TRANSFER**

Students planning to transfer to a four-year college should complete the lower-division major requirements and the general education pattern for the appropriate transfer institution. Santa Monica College has articulation agreements for this major with the following UC, CSU, and private institutions. Exact major requirements for these and other UC and CSU campuses can be found online [www.assist.org](http://www.assist.org). Articulation agreements with private institutions can be found online at [www.smc.edu/articulation](http://www.smc.edu/articulation).

### **PHARMACY SCHOOLS IN CALIFORNIA INCLUDE**

#### **UNIVERSITY OF CALIFORNIA, SAN DIEGO**

Prerequisite coursework for admission to the Doctor of Pharmacy Program:

It is highly recommended that students have four years of undergraduate study and complete the requirements for the bachelor's degree (*B.S. or B.A.*) prior to entering the UCSD School of Pharmacy and Pharmaceutical Sciences. The absolute, minimum requirements are 90 quarter units or 60 semester units taken at an accredited college or university in the United States and completion of the prerequisite coursework listed below. Students who have attended a foreign school must have completed at least one year of study at a four-year college or university in the United States prior to application. Entrance examinations such as the P.C.A.T. or G.R.E. are not required. Students with international transcripts should e-mail the School of Pharmaceutical Sciences at [pharmacy@ucsd.edu](mailto:pharmacy@ucsd.edu) providing your first and last name, an e-mail address, and the full name of the school (or schools) you attended outside the United States.

A solid understanding of the fundamental sciences is essential for the study of the pharmaceutical and biomedical sciences, and applications are required to have successfully completed with a grade of C (2.0) or higher the following prerequisite coursework.

Applications may have an undergraduate major in any area of interest, as long as the prerequisite coursework have been completed.

Proficiency in a foreign language, such as Spanish, is considered highly desirable.

Students who have completed only the minimum prerequisite coursework and who do not intend to obtain a Bachelor of Arts degree may be at a competitive disadvantage in the application process compared to students who have earned their degree.

**SUGGESTED SANTA MONICA COLLEGE COURSES:** Biology 21, 22, 23; Chemistry 11 **and** 12; Chemistry 21, 22, **and** 24; Physics 21 **and** 22 **or** 6 **and** 7 **or** 8 **and** 9; Math 7 **and** 8; English 1 **and** 2; Economics 1 **or** 2; Speech 1

For more information on UCSD's new PharmD program contact: [pharmacy@ucsd.edu](mailto:pharmacy@ucsd.edu), or <http://pharmacy.ucsd.edu>

**UNIVERSITY OF CALIFORNIA, SAN FRANCISCO**

**ADMISSION REQUIREMENTS INCLUDE:** completion of a minimum of two years of pre-pharmacy prerequisites (62 semester units) to include the following: **Biology** 21, 22 **and** 23; **Physiology** 3; **English** 1 **and** (2 **or** 31); **Chemistry** 11, 12, 21, 22 **and** 24; **Math** 7, 8; **Physics** 21 **or** 6 **or** 8; 22 **or** 7 **or** 9; **Speech** 1, **Economics** 1 **or** 2; select one course from the following: **Anthropology** 2; **Psychology** 1; **Sociology** 1; 18 semester units of Humanities/Social Sciences to include the following three courses: **Speech** 1; **Economics** 1 **or** 2; select one course from the following: **Anthropology** 2; **Psychology** 1; **Sociology** 1

Santa Monica College has articulation agreements for this major (see [www.smc.edu/articulation](http://www.smc.edu/articulation) for exact major requirements) with the following private and out-of-state institutions:

**LOMA LINDA UNIVERSITY**

Loma Linda University will require that applicants complete a minimum of 60 semester units of undergraduate work prior to applying. Since specific admissions requirements have not been developed at this time, Loma Linda University advises applicants to follow a course of study common to admission to other schools of pharmacy (1 year each of general chemistry, organic chemistry, physics, biology, calculus, and English and 1 course each of public speaking, economics, and social sciences). Applicants can provide their mailing address to Loma Linda University, School of Pharmacy and they will mail an information packet and application when they are ready.

Contact the LLC School of Pharmacy at: [gradschool@univ.llu.edu](mailto:gradschool@univ.llu.edu) or call (800) 422-2558.

**PALM BEACH ATLANTIC UNIVERSITY-SCHOOL OF PHARMACY (FLORIDA)**

Admission to the Doctor of Pharmacy degree program requires 66-67 semester unit hours, of pre-professional education at a regionally accredited college or university.

*Minimum specific course requirements:*

**English Composition** - 3 semester units; **Macroeconomics or Microeconomics** - 3 semester units; **Elementary Statistics** - 3 semester units; **Calculus** (*Business Calculus does not meet this requirement*) - 3-4 semester units; **General Chemistry** with lab I, II - 8 semester units; **Organic Chemistry** with lab I, II - 8 semester units; **General Biology** with lab I, II - 8 semester units; **Human Anatomy and Physiology** with lab I, II - 8 semester units; **Microbiology** with lab - 4 semester units; **Biochemistry** - 3 semester units; **Speech** - 3 semester units; **Humanities** (*Social/Behavioral Sciences*) may be substituted - 9 semester units

Suggested Santa Monica College courses:

**Anatomy** 1; **Biology** 21, 22, 23; **Chemistry** 11 **and** 12; **Chemistry** 21 **and** 22 **and** 24; **Chemistry** 31; **English** 1 **and** (2 **or** 31); **Math** 52 **or** 54; **Microbiology** 1; **Physiology** 3; **Speech** 1; 9 units of **Humanities** courses (*Social/Behavioral Sciences may be substituted*)

- Grades below C- cannot be accepted toward completion of these requirements.
- The minimum cumulative and science (*chemistry, biology, physics and math*) grade point average (GPA) requirement is 2.75.
- All prerequisites must be completed by May of the year seeking admission into Gregory School of Pharmacy.

**UNIVERSITY OF THE PACIFIC-THE THOMAS J. LONG SCHOOL OF PHARMACY & HEALTH SCIENCES PHARM D PROGRAM**

**ADMISSION REQUIREMENTS INCLUDE:** **Chemistry** 11, 12, 21, 22, 24; **Economics** 2; **Math** 7 **or** 23; **Microbiology** 1; **Physics** 21 **or** 6 **or** 8; **Psychology** 1 **or** 14; **Speech** 1; select two courses from the following: **Biology** 21, 22, 23; select two courses from the following: **English** 1, 2, 31

**GENERAL EDUCATION CATEGORIES**

Students who have not completed a U.S. Bachelor of Arts degree must complete the following general education categories: (*a minimum of one 3 semester/4 quarter unit course in each area is required*).

**IC: INTERNATIONAL OR INTERCULTURAL STUDIES**

Select one course from the following: **Anthropology** 2, 3, 14, 20; **English** 50; **Geography** 2; **History** 3, 4, 5, 6, 19, 21-39; **Political Science** 2, 7, 8, 11, 14; **Speech** 7

**IIB: FUNDAMENTAL HUMAN CONCERNS**

Select one course from the following: **English** 51, 52; **History** 1, 2, 55; **Philosophy** 1, 2, 3, 4, 5, 6, 10, 22, 23, 24, 51, 52; **Political Science** 51, 52; **Religious Studies** 51, 52

**IIC: PRACTICE AND PERSPECTIVE IN ARTS**

Select one course from the following: **Art** 1-73; **Cinema** 1-10; **Dance** 5, 7; **English** 15, 55; **Music** 1, 30-37; **Theatre Arts** 2, 5, 7

Please see [www.pacific.edu/pharmd](http://www.pacific.edu/pharmd) for more information.

**UNIVERSITY OF SOUTHERN CALIFORNIA (USC)**

A minimum of 90 semester or 135 quarter units with a minimum grade of C in each course and a cumulative grade point average of 3.0. Grades of "pass/no-pass" will not be accepted (unless a course is offered only on a "pass/no-pass" basis). Candidates who have received or will receive a Bachelor of Arts degree or who have completed units in excess of the minimum required will be considered more favorably than applicants who have fulfilled only minimum requirements.

*"Pre-pharmacy requirements in the following areas must be repeated if they are 9 years or older at the time the application is submitted: mammalian physiology, microbiology, molecular biology, biochemistry and organic chemistry (full year). These courses must be repeated at a four year college/university."*

**Holders of international degrees** are required to complete the following courses in the USA at an accredited **four year** degree granting college or university: mammalian physiology, molecular biology, biochemistry and microbiology. English and interpersonal communication must also be completed in the USA, but may be completed at a two year college along with any other required humanities, social or behavioral sciences.

**Please Note:** English and Communication courses taken in a foreign country will be accepted only from countries whose native language is English (e.g., Great Britain, English-speaking Canada, Australia, New Zealand and the British West Indies). Students from any other foreign country must take English and Communication courses in the United States.

It is recommended that as many of these courses as possible be completed prior to transfer.

**CALCULUS**

1 semester/2 quarters: **Math 7**

**GENERAL CHEMISTRY**

One year course with lecture and lab: **Chemistry 11 and 12**

**ORGANIC CHEMISTRY**

One year course with lecture and lab: **Chemistry 14 and 16 or 21; 22 and 24**

**GENERAL BIOLOGY**

One year course with lecture and lab (usually cellular and organismic biology): **Biology 21 (6A) and 23 (7)**

**BIOCHEMISTRY**

One course: **Chemistry 31**

**MICROBIOLOGY**

One course: **Microbiology 1**

**MOLECULAR BIOLOGY**

One course: **Biology 22**

**PHYSICS**

One year: **Physics 6 and 7 or 8 and 9 or 21 and 22 and 23**

**PHYSIOLOGY**

One course: **Physiology 3**

**STATISTICS**

One course: **Math 52**

**ENGLISH COMPOSITION**

One course: **English 1, 2 or 31**

**COMMUNICATIONS**

One course: **Speech 5 or Psychology 5**

**GENERAL PSYCHOLOGY OR SOCIOLOGY**

One course: **Psychology 1 or Sociology 1**

**MICRO OR MACROECONOMICS**

One course: **Economics 1 or 2**

**SOCIAL AND BEHAVIORAL SCIENCES**

Students who have earned or will earn a baccalaureate degree in the U.S. before beginning the PharmD. Program and meet the prerequisites described above (*including introduction to psychology or introduction to sociology and micro- or macro-economics*) will have fulfilled the requirements for social and behavioral sciences.

Students who will not have earned a baccalaureate degree before beginning the PharmD. Program must complete an additional 2 semesters/3 quarters of courses in the social and behavioral sciences. Recommended areas include: anthropology, psychology, psychobiology, economics, geography, and sociology.

**HUMANITIES**

Students who have earned or will earn a baccalaureate degree in the U.S. before beginning the PharmD. Program and meet the prerequisites above will have fulfilled the requirements for humanities. Students who will not earn a Bachelor of Arts degree before beginning the PharmD. Program must complete 2 semesters/3 quarters of courses in literature, philosophy, history, ethics, foreign language, art history, or music history. Studio or performance classes in art and music are not acceptable.

**WESTERN UNIVERSITY OF HEALTH SCIENCES**

**Anatomy 1 or 2; Chemistry 11, 12, 21, 22, 24, 31; Math 7; English 1, 2; Microbiology 1; Physiology 3; Speech 1; one semester course in two of the following three areas: Public Speaking/Debate; Social Sciences; Economics.**

**Pharmacy College Admissions Test (PCAT):** Not required

**PHARMACY SCHOOLS OUTSIDE OF CALIFORNIA INCLUDE****TOURO UNIVERSITY**

Candidates who have obtained a Bachelor of Arts degree (*or will obtain a Bachelor of Arts degree prior to the start of classes*) are eligible for admission to the College of Pharmacy provided they meet the following prerequisite requirements and coursework. **Pharmacy College Admissions Test (PCAT):** Not required.

- 8 semester/12 quarter units of Inorganic Chemistry with lab
- 8 semester/12 quarter units of Organic Chemistry with lab (*4 semester units of Biochemistry may be substituted for the second semester of Organic Chemistry*)
- 4 semester/6 quarter units of Human Anatomy/Physiology (*combined course*) with lab **or** one course each of Human Anatomy and Human Physiology with labs
- 4 semester/6 quarter units of Microbiology with lab
- 3 semester units of Calculus
- All prerequisite coursework completed with a grade of C or higher
- Minimum cumulative and science grade point average of 2.5 (*candidates who qualify for secondary applications typically have GPA's substantially higher than 2.5*)

**CANDIDATES WITHOUT A BACHELOR'S DEGREE**

Though it is strongly recommended that candidates for the Doctor of Pharmacy Degree program obtain a Bachelor of Arts degree prior to the start of classes, candidates without a Bachelor of Arts degree who have completed more than 60 college semester units may be accepted to the program provided they meet all of the prerequisite requirements and coursework listed above as well as the following additional coursework:

- 3 semester units of College English
- 3 semester units of English Composition
- 3 semester units of Speech/Communication
- 3 semester units of Economics