**Pharmacy Programs**

**Pharmacy Mission**

Our mission is to provide an exemplary educational experience that leads to highly competent and practice-ready caring pharmacists and pharmaceutical scientists who are accountable for improving the health and well-being of society. The programs seek to advance knowledge through collaborative education, science, research, service, patient care and advocacy. The school strives to achieve academic and professional excellence.

By virtue of their innate abilities and their education and experiences at Pacific, our graduates are:

- accomplished and compassionate practitioners dedicated to improving inpatient care in traditional and emerging roles in all practice settings;
- capable of critical thinking, problem solving and strong individual and team leadership;
- filled with the desire, knowledge and skills to serve their diverse communities and professions locally, regionally, nationally and globally;
- able to advance the profession of pharmacy by providing high quality health care, innovative practice models and leadership in healthcare policy to meet the needs of an increasingly diverse population;
- able to advance the pharmaceutical sciences by developing cutting-edge research and contributing to scientific discovery;
- prepared and inspired to seek postgraduate and continuing professional development; and
- ambassadors for preventive health and wellness

**Programs in Pharmacy and Pharmaceutical Sciences**

The Thomas J. Long School of Pharmacy and Health Sciences offers the Pre-Pharmacy Advantage program, Doctor of Pharmacy degree and graduate degrees in the pharmaceutical and chemical sciences.

**Pre-Pharmacy Advantage Program**

The University of Pacific offers first-time undergraduate freshmen three options that can lead to guaranteed admission into Pacific’s Doctor of Pharmacy program. The options are the five-year (2+3) Pre-Pharmacy/PharmD option, the six-year (3+3) Pre-Pharmacy/PharmD option and the seven-year (4+3) Bachelor’s/PharmD option. Specific admission criteria for each ensure that students have the appropriate time to successfully prepare for advancement into the professional pharmacy program.

Interested students should request information about the Pacific Pre-Pharmacy Advantage Program from the Admissions Office or visit http://www.pacific.edu/Academics/Schools-and-Colleges/Thomas-J-Long-School-of-Pharmacy-and-Health-Sciences/Academics/Pre-Health-Sciences.html. More specific program information is provided in the section on the Pre-Pharmacy Advantage Program.

**Doctor of Pharmacy Program**

The Doctor of Pharmacy Program is an accelerated program designed to develop pharmacy practitioners who are able to enter community and hospital pharmacy practice, residencies, and other roles in pharmacy and health care. Satisfactory completion of the Doctor of Pharmacy degree enables a student to sit for pharmacy licensing examinations throughout the United States, and eventually practice pharmacy. The basic residence requirement for completion of the Doctor of Pharmacy degree is eight semesters, which is completed in approximately two and two-thirds years. This has been made possible by utilizing the summer months for instruction, thus providing the same number of instructional semesters as in four academic years. The first two years of the program include on campus course work plus introductory pharmacy practice experiences. The final year of the program consists of advanced pharmacy practice experiences in health care settings. More specific program information is provided in the section on the Doctor of Pharmacy program.

**Accreditation**

Organized in 1955, the Thomas J. Long School of Pharmacy and Health Sciences is a member of the American Association of Colleges of Pharmacy, and its Doctor of Pharmacy Program is fully accredited by the Accreditation Council for Pharmacy Education (ACPE). Accreditation information can be found online at http://www.acpe-accredit.org/ or by contacting:

ACPE
20 North Clark Street, Suite 2500
Chicago, IL 60602-5109
Phone: (312) 664-3575
Fax: (312) 664-4652
E-mail: info@acpe-accredit.org

**Pharmacy Licensure**

For California pharmacy licensure requirements see http://www.pharmacy.ca.gov/ or contact:

the California State Board of Pharmacy
1625 N. Market Blvd., Suite N219
Sacramento, CA 95834

Contact information for boards of pharmacy from other states can be found through the National Association of Boards of Pharmacy at http://www.nabp.net/.

**Pre-Pharmacy Advantage Program**

In order to earn a guaranteed seat in the Doctor of Pharmacy program, all of the following criteria must be met within 5 (five) years of entering the University; all seven-year (4+3) students must also obtain a Bachelors degree (BS or BA) from Pacific in addition to these criteria. A Math/Science GPA of 2.7 (by June 1st of the year the student matriculates to the Doctor of Pharmacy program) and a cumulative Pacific GPA of 3.0 must be achieved.

*The Math/Science GPA does not include all math and science courses. For a specific list of Math/Science courses, please contact the Office of Pre-Pharmacy and Pre-Health Affairs at PreHealth@pacific.edu or (209) 946-2563.*

**I. General Education Requirements**

Minimum of 28 units that include:

- PACS 001 What is a Good Society 4
- PACS 002 Topical Seminar on a Good Society 4

One course from each subdivision below:

**Social and Behavioral Sciences**

- IA. Individual and Interpersonal Behavior
- IB. U.S. Studies
- IC. Global Studies
IV. Major Requirements

Students must demonstrate competence in:

Arts and Humanities

IIA. Language and Literature

IIIB. Worldviews and Ethics

IICC. Visual and Performing Arts

Natural Sciences and Mathematics

IIIA. Natural Sciences

IIIB. Mathematics and Formal Logic

IIICC. Science, Technology and Society

or a second IIIA Natural Sciences course

Note: 1) No more than 2 courses from a single discipline may be applied to meet the requirements of the general education program.

II. Diversity Requirement

Students must complete one diversity course (3-4 units)

Note: 1) The diversity requirement only applies to students obtaining a bachelors degree. 2) Courses may also be used to meet general education and/or major/minor requirements.

III. Fundamental Skills

Students must demonstrate competence in:

Writing

Quantitative analysis

IV. Major Requirements

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<thead>
<tr>
<th>Course</th>
<th>Title</th>
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<tbody>
<tr>
<td>BIOL 051</td>
<td>Principles of Biology</td>
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<td>BIOL 061</td>
<td>Principles of Biology</td>
<td>5</td>
</tr>
<tr>
<td>BIOL 081</td>
<td>Human Physiology</td>
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<td>BIOL 145</td>
<td>Microbiology</td>
<td>5</td>
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<tr>
<td>CHEM 025</td>
<td>General Chemistry</td>
<td>5</td>
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<tr>
<td>CHEM 027</td>
<td>General Chemistry</td>
<td>5</td>
</tr>
<tr>
<td>CHEM 121</td>
<td>Organic Chemistry</td>
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<tr>
<td>CHEM 123</td>
<td>Organic Chemistry</td>
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<tr>
<td>PRAC 101</td>
<td>Pharmacy Orientation</td>
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<td>PHYS 025</td>
<td>General Physics II</td>
<td>5</td>
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<tr>
<td>PHYS 053</td>
<td>Principles of Physics I</td>
<td>5</td>
</tr>
<tr>
<td>PHYS 055</td>
<td>Principles of Physics II</td>
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<td>MATH 033</td>
<td>Elements of Calculus</td>
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<tr>
<td>MATH 051</td>
<td>Calculus I</td>
<td>5</td>
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<tr>
<td>MATH 053</td>
<td>Calculus II</td>
<td>5</td>
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<tr>
<td>MATH 055</td>
<td>Calculus III</td>
<td>5</td>
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<tr>
<td>COMM 027</td>
<td>Public Speaking (Fall or Spring semester only)</td>
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<th>Units</th>
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<td>PSYC 031</td>
<td>Introduction to Psychology</td>
<td>4</td>
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<tr>
<td>PSYC 111</td>
<td>Abnormal Psychology</td>
<td>4</td>
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Select one of the following:

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<th>Title</th>
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<tbody>
<tr>
<td>ECON 051</td>
<td>Economic Principles and Problems</td>
<td>5</td>
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<tr>
<td>ECON 055</td>
<td>Introductory Macroeconomics: Theory and Policy</td>
<td>5</td>
</tr>
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</table>

Two positive Letters of Reference

* References cannot be from an immediate family member

Passing Writing Sample

Passing Interview

* First course satisfies GE IIIA and second course satisfies GE IIIC
** Satisfies GE IIIB requirement.
*** Satisfies GE IIA requirement.
+ Satisfies GE IA requirement.
++ Satisfies GE IB requirement

Admission into the Doctor of Pharmacy Program

There are two pathways for admission into the Doctor of Pharmacy Program: 1) Pacific’s Pre-Pharmacy Advantage Program; and 2) application as a transfer student from another college, university, or program within the University of the Pacific. The criteria for advancement from the Pre-Pharmacy Advantage Program to the Doctor of Pharmacy program are provided in the description of the Pre-Pharmacy program.

For information about admission to the Doctor of Pharmacy Program as a transfer student, see the “Special Requirements for Pharmacy Applicants” section under Admission Requirements at the front of this catalog or information provided on the University’s website at http://www.pacific.edu/pharmd. The pharmacy faculty determines admission requirements but the Office of Admission manages the admissions process. Questions regarding admission are directed to the Office of Admission. The program places strong emphasis on the academic record, verbal and written communication skills, demonstrated interest and experience in healthcare and leadership qualities in the selection process. The School attempts to select students with strength in all of these areas. After review of the completed application, the Office of Admission invites qualified candidates to participate in interviews on campus and a writing demonstration. Admissions decisions are based on the application, letters of recommendation, the interviews and the writing sample.

Pharmacy Pre-Professional Curriculum Requirements

At least sixty four (64) transferable semester units are required prior to entry into the Doctor of Pharmacy program. Those courses are listed below. The liberal arts requirements must total a minimum of twenty eight (28) semester or forty two (42) quarter units. No more than two semester units of physical education are used to fulfill the electives requirements. These requirements will be satisfied by successful completion of the Pre-Pharmacy Advantage program, which is described in detail in that section.

- Mathematics: One semester of college-level calculus or its equivalent.
- Physics: One year of high school physics (with laboratory) or one semester/quarter of college physics (with laboratory).
- Chemistry: (1) General chemistry with lab, eight semester units minimum and (2) organic chemistry with lab, eight semester units minimum. Coursework is designed for chemistry or biology majors.
- Biological Sciences: General biology, eight semester units with laboratory both semesters; coursework may include two semesters zoology, one semester each botany and zoology, or two semesters of general biology designed for biology majors; general microbiology, four units.
- Writing for College or equivalent: One semester, minimum.
- Reading for College or equivalent: One semester, minimum.
- Public Speaking: Three semester/four quarter units, minimum.
- Psychology: One semester, minimum.
- Economics: Three semester/four quarter units, minimum.
Professional Curriculum for the Doctor of Pharmacy Degree

The professional curriculum for the Doctor of Pharmacy program has been designed to prepare graduates possess and demonstrate the following attributes:

- Learner and applier of foundational knowledge
- Patient-centered caregiver
- Medication use systems manager
- Health and wellness promoter
- Population-based care provider
- Problem-solver
- Educator
- Patient advocate
- Interprofessional collaborator
- Includer with cultural sensitivity
- Communicator
- Self-aware
- Leader
- Innovator
- Professional

A minimum of 142 units are required in the professional curriculum, which includes a total of 4 units of electives prior to program semester 7 and 12 units of elective rotations in semesters 7 and 8.

Note: The following courses must be taken in the prescribed semester sequence because of the integrated nature of the pharmacy curriculum. The IPPEs noted below with the ‘#’ mark can be taken in Semesters 3, 4 or 5. A grade of C or better is required to pass Practicum II to IV courses in semesters 3 through 6 and the advanced pharmacy practice experiences in semesters 7 and 8. [IPPE stands for Introductory Pharmacy Practice Experiences and APPE stands for Advanced Pharmacy Practice Experiences.]

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>PHRM 111 Pharmacy Practice and Professionalism</th>
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<tbody>
<tr>
<td></td>
<td>PHRM 112 Dispensing, Compounding and Calculations</td>
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<tr>
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<td>PHRM 113 Molecular and Cellular Biochemistry</td>
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<td>PHRM 114 Physical Pharmacy and Dosage Forms</td>
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<td>PHRM 115 Nonprescription Therapy and Self Care</td>
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<td>PHRM 118 Practicum I</td>
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<tr>
<th>Semester 2</th>
<th>PHRM 121 Informatics, Statistics and Research Design</th>
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<tr>
<td></td>
<td>PHRM 122 Physiology and Pathophysiology I</td>
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<tr>
<td></td>
<td>PHRM 123 Physiology and Pathophysiology II</td>
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<tr>
<td></td>
<td>PHRM 124 Drug Metabolism and Disposition</td>
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<td></td>
<td>PHRM 129 Community I IPPE</td>
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<table>
<thead>
<tr>
<th>Semester 3</th>
<th>PHRM 134 Applied Pharmacokinetics and Pharmacogenomics</th>
<th>4</th>
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<tr>
<td></td>
<td>PHRM 135 Pharmacology and Medicinal Chemistry I</td>
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<td></td>
<td>PHRM 136 Pharmacology and Medicinal Chemistry II</td>
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Other Entrance and Progression Requirements

Entrance and progression in the Doctor of Pharmacy program requires that students provide documentation of receiving the required immunizations and disease screening. Students must also meet certain technical standards (see http://www.pacific.edu/Admission/Graduate-Professional/Pharmacy/Pharm-D-Technical-Standards.html) for entrance into and progression through the Doctor of Pharmacy program.

Participation in introductory and advanced pharmacy practice experiences requires a California pharmacy intern license. Program and pharmacy practice experience requirements also include required drug screening and background checks.

Academic Standards

Students must successfully pass each required course in each semester in order to be allowed to enroll in the subsequent semester. Because of the integrated nature of the pharmacy curriculum, students are not permitted to enroll in pharmacy courses out-of-sequence.

In order to remain in good academic standing, a student must maintain a 2.0 grade point average in all required professional coursework and in all University course work. Students with a course grade point deficiency of 0.1 to 7.9 will be placed on probation. Students with a major, required course grade point deficiency of from 8.0 to 12.0 are placed on probation and are not permitted to enroll in new required courses. Students with a required course grade point deficiency of 12.0 or greater will be disqualified from the professional program. Students who fail or receive a No Credit grade in the same required course twice or who fail any two advanced pharmacy practice experiences will also be disqualified from the program.

Students must pass all required courses. A grade of C or better is required to pass the four practicum courses in semesters 1 through 6 and the six advanced pharmacy practice experience courses in semesters 7 and 8 of the program. In other courses, a grade of D or better is required. A student who has a major grade point deficiency or who has not successfully completed all required course work plus 4 units of elective course work may not enroll in advanced pharmacy practice experiences until the deficiency is corrected. As noted above, a grade point average in all courses of 2.0 or better and a required grade point deficiency of zero or better is required for graduation.
Substitutions for Required Courses

PHRM 160 Practice-Based IPPE (2 units) may be substituted for PHRM 159 Community II IPPE

PRAC 143 Health Care Outreach IPPE – Medicare Part D (1 unit) may be substituted for PHRM 169 Health Care Outreach IPPE

Professional Electives

All candidates for the Doctor of Pharmacy degree are required to complete a minimum of four (4) semester units of career-related electives while in residence and prior to progression into the Advanced Pharmacy Practice Experiences. These may be pharmacy electives or approved University electives. Electives taken during pre-pharmacy or while not in residence will not be used to fulfill this requirement. Electives taken to fulfill the general education or liberal arts requirement are not be used to fulfill this requirement. Students are also required to complete twelve (12) semester units of elective advanced pharmacy practice experiences in the senior year.

Pharmacy Practice Experience and Practice Experience Placement Policy

All pharmacy students are required to complete introductory and advanced pharmacy practice experiences as part of their formal program of study. The total number of hours spent in introductory and advanced pharmacy practice experiences will meet the requirements for the number of pharmacy intern hours required for application for pharmacy licensure in California if students follow the appropriate procedures for documentation and signatures.

The introductory pharmacy practice experiences include experiences in community pharmacy, hospital pharmacy, geriatrics pharmacy, and health care outreach during the first six semesters of the program. The advanced practice experience consists of two semesters during the senior year. The student is required to enroll in four required six-week rotations that include Community, Hospital, Ambulatory Care and Internal Medicine advanced pharmacy practice experiences. In addition, each student must complete two six-week elective rotations.

Upon admission, each student is required to sign a form that gives the Thomas J. Long School of Pharmacy and Health Sciences the right to place the student in appropriate experiential sites. The selection of the sites for introductory and advanced pharmacy practice experiences is made at the sole discretion of the University of the Pacific Thomas J. Long School of Pharmacy and Health Sciences. Introductory pharmacy practice experiences generally occur within a one hour drive of the School. For completion of advanced pharmacy practice experiences, each student is assigned to region within California or possibly other nearby states.

Graduation Requirements

Graduation requirements for each entering class are given to each student at the beginning of the first professional year. Accreditation requirements and curriculum changes may necessitate changes in these requirements. The Thomas J. Long School of Pharmacy and Health Sciences reserves the right to modify or change the curriculum at any time without prior notice.

All requirements for the Doctor of Pharmacy degree must be completed within five (5) calendar years of the student’s initial enrollment in the Doctor of Pharmacy program.

Completion of the Doctor of Pharmacy degree requires a minimum of 205 semester units (pre-pharmacy plus pharmacy) in the new curriculum and 198 semester units (pre-pharmacy plus pharmacy) in the old curriculum.

Eight semesters of Thomas J. Long School of Pharmacy and Health Sciences residency are required for the Doctor of Pharmacy programs. A semester in residence consists of registering for a minimum of 12 semester units each semester.

Semester 4

<table>
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<tr>
<th>Course Code</th>
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<tr>
<td>PHRM 142</td>
<td>Physiology and Pathophysiology III</td>
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<tr>
<td>PHRM 145</td>
<td>Pharmacology and Medicinal Chemistry III</td>
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</tr>
<tr>
<td>PHRM 146</td>
<td>Therapeutics I Neuro-Psychiatry</td>
<td>4</td>
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<tr>
<td>PHRM 147</td>
<td>Therapeutics II GI/Hepatic/Nutrition</td>
<td>2</td>
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<tr>
<td>PHRM 149</td>
<td>Hospital IPPE</td>
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Elective(s)* 0-2

Total Hours 16-18

Semester 5

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<tr>
<td>PHRM 151</td>
<td>Pharmacoeconomics, Benefits and Outcomes</td>
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<td>PHRM 156</td>
<td>Therapeutics III Cardiology</td>
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<tr>
<td>PHRM 157</td>
<td>Therapeutics IV Renal/Respiratory</td>
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<tr>
<td>PHRM 158</td>
<td>Practicum III</td>
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<tr>
<td>PHRM 159</td>
<td>Community II IPPE</td>
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<tr>
<td>PHRM 167</td>
<td>Therapeutics VII Endocrine/Musculoskeletal</td>
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<tr>
<td>PHRM 169</td>
<td>Health Care Outreach IPPE</td>
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Elective(s)* 0-2

Total Hours 17-19

Semester 6

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<tr>
<td>PHRM 152</td>
<td>Pharmacy Law and Ethics</td>
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<td>PHRM 161</td>
<td>Pharmacy Management</td>
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<td>PHRM 165</td>
<td>Therapeutics V Infectious Diseases</td>
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<td>PHRM 166</td>
<td>Therapeutics VI Oncology/Transplantation</td>
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<td>PHRM 168</td>
<td>Practicum IV</td>
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Elective(s)* 0-2

Total Hours 13-15

Semester 7 and 8

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<tr>
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<td>Internal Medicine APPE</td>
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<tr>
<td>PHRM 172</td>
<td>Ambulatory Care APPE</td>
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<td>PHRM 173</td>
<td>Hospital Care APPE</td>
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<td>PHRM 174</td>
<td>Community Pharmacy APPE</td>
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<tr>
<td>PHRM 175</td>
<td>Advanced Pharmacy Practice Experience Capstone I</td>
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<tr>
<td>PHRM 176</td>
<td>Advanced Pharmacy Practice Experience Capstone II</td>
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<td>PHRM 184</td>
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<tr>
<td>PHRM 185</td>
<td>APPE Elective II</td>
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Total Hours 38

Substitutions for Required Courses

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A grade point average of 2.00 (on a 4-point scale) is required for graduation in: (1) all required Doctor of Pharmacy courses and (2) all courses taken while in residence in the professional program.

**Pharmacy Courses**

**PHAR 149. Professional Communication and Interviewing. 1 Unit.**

**PHAR 150. Teaching Assistant for Professional Communication and Interviewing. 2 Units.**

This course enables students to participate at a coordinator level in the process of professional communications and interviewing. Students are assigned specific coordinator roles and work in cooperation with the Office of Student and Professional Affairs, other students, and faculty in fulfilling those roles. Prerequisite: PHAR 149.

**PHAR 197. Research. 1-4 Units.**

**Other Pharmacy Courses**

**PHRM 100. Continuous Registration. 0 Units.**

**PHRM 111. Pharmacy Practice and Professionalism. 3 Units.**

This course is an introduction to the roles and responsibilities of the pharmacist in general and in various practice settings with a focus on leadership and professional development. Prerequisite: admission to the Doctor of Pharmacy Program. (DVSY)

**PHRM 112. Dispensing, Compounding and Calculations. 3 Units.**

This course presents mathematical concepts as they apply to the practice of pharmacy. The course also presents information on the techniques needed for the proper compounding and dispensing of medication as well as those techniques needed for communicating effectively with patients and health care professionals. Prerequisite: admission to the Doctor of Pharmacy program.

**PHRM 113. Molecular and Cellular Biochemistry. 4 Units.**

This course is a conceptual study of cellular function and control mechanisms at the molecular level. Prerequisite: admission to the Doctor of Pharmacy program.

**PHRM 114. Physical Pharmacy and Dosage Forms. 5 Units.**

Students study dosage forms and the relationship between the physicochemical properties of drugs and drug reaction. Prerequisite: admission to the Doctor of Pharmacy program.

**PHRM 115. Nonprescription Therapy and Self Care. 2 Units.**

Students study the principles of triage and self care that use non-prescription pharmacotherapy and dietary supplements. Prerequisite: admission to the Doctor of Pharmacy program.

**PHRM 118. Practicum I. 2 Units.**

Pharmacy practice skills and knowledge are developed through completion of self-study modules and guided practice simulations. The practicum experiences relate to effective patient counseling for the most commonly prescribed and select non-prescription medications, smoking cessation products, and immunizations in addition to application of appropriate techniques for measurement of blood pressure, blood glucose and administration of immunizations for adults. Prerequisite: admission to the Doctor of Pharmacy Program.

**PHRM 121. Informatics, Statistics and Research Design. 3 Units.**

Students develop an understanding of the availability, selection and use of electronic and printed sources of medical and pharmacy information. Approaches to effectively responding to drug information questions in addition to analyzing and critiquing medical and pharmacy literature based on knowledge of the essentials of study design and statistics. Students will also understand the research steps prior to and following drug approval by the Food and Drug Administration. Prerequisite: a passing grade in all required courses in Semester 1 in the Doctor of Pharmacy Program.

**PHRM 122. Physiology and Pathophysiology I. 5 Units.**

This course is an integrated study of the cellular, anatomical, physiological, and pathophysiological components of the nervous and gastrointestinal systems. Prerequisite: a passing grade in all required courses in Semester 1 of the Doctor of Pharmacy program. Prerequisite, may be taken concurrently: PHRM 123.

**PHRM 123. Physiology and Pathophysiology II. 5 Units.**

This course is an integrated study of the cellular, anatomical, physiological, and pathophysiological components of the pulmonary, cardiovascular and renal systems. Prerequisite: a passing grade in all required courses in Semester 1 of the Doctor of Pharmacy program. Prerequisite, may be taken concurrently: PHRM 122.

**PHRM 124. Drug Metabolism and Disposition. 3 Units.**

This is a continuation course of PHRM 114 (Physical Pharmacy and Dosage Form) that utilizes the LADME framework (Liberation, Absorption, Distribution, Metabolism, and Excretion) to understand the biopharmaceutic, biometabolic and pharmacokinetic concepts underlying drug action. Prerequisite: a passing grade in all required courses in Semester 1 of the Doctor of Pharmacy program.

**PHRM 129. Community I IPPE. 2 Units.**

This course is a practice-based introductory experience that focuses on the role of the Pharmacist/Pharmacy Intern in a community pharmacy practice. This course is designed to allow students to participate in the delivery of pharmaceutical care. Prerequisites: a passing grade in all required courses in Semester 1 of the Doctor of Pharmacy Program and a current PharmacyIntern license. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

**PHRM 134. Applied Pharmacokinetics and Pharmacogenomics. 4 Units.**

This course is a continuation of PHRM 114 Physical Pharmacy & Dosage Forms and PHRM 124 Drug Metabolism & Disposition that use the LADME framework (Liberation, Absorption, Distribution, Metabolism, and Excretion) to understand biopharmaceutic and pharmacokinetic/pharmacodynamic principles governing drug behavior in the body. Additionally, the design of modified release drug delivery systems is covered. Prerequisite: a passing grade in all required courses in Semester 1 to 2 in the Doctor of Pharmacy program.

**PHRM 135. Pharmacology and Medicinal Chemistry I. 4 Units.**

The first course in the Pharmacology and Medicinal Chemistry series, effects of autonomic and central nervous system therapeutic agents and the mechanisms whereby these effects are induced. Drug classes will be presented to illustrate the effects of drug classes in the treatment of diseases. The principles of drug action and receptor theory will also be covered. Prerequisite: a passing grade in all required courses in Semesters 1 to 2 in the Doctor of Pharmacy program.

**PHRM 136. Pharmacology and Medicinal Chemistry II. 4 Units.**

The second course in the Pharmacology and Medicinal Chemistry series covers the effects of antimicrobial, hematologic, and gastrointestinal therapeutic agents and the mechanisms whereby these effects are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of diseases. The mechanisms of drug toxicity is also covered. Prerequisite: a passing grade in all required courses in Semester 1 to 2 of the Doctor of Pharmacy program.
PHRM 138. Practicum II. 2 Units.
Students develop communication, assessment and documentation abilities to prepare them for didactic courses and practice experience. Students learn to conduct a patient history, perform basic physical examinations, interpret common clinical laboratory data and diagnostic tests, and document pharmacist-directed patient care using standardized approaches. Students assess simulated patient scenarios using a standardized SOAP (subjective data, objective data, assessment, plan) format. Each student is expected to demonstrate proficiency in each major ability. Prerequisite: a passing grade in all required courses in Semester 1 to 2 of the Doctor of Pharmacy program.

PHRM 139. Geriatrics Introductory Pharmacy Practice Experience. 2 Units.
PHRM 139 introduces practice-based experience that focuses on long term care, senior care, and geriatric patients. It is designed as a method to enhance each student’s understanding of the role and responsibilities of pharmacists in the long term care and other geriatric care settings through the provision of pharmaceutical care to patients. Prerequisites are the successful completion of (passing grade in) all required courses in Semester 1 and 2 of the Doctor of Pharmacy program and a current Pharmacy Intern license. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PHRM 142. Physiology and Pathophysiology III. 5 Units.
This course is an integrated study of the cellular, anatomical, physiological, and pathophysiological components of the pulmonary, cardiovascular and renal systems. Prerequisite: a passing grade in all required courses in Semester 1 to 3 of the Doctor of Pharmacy program.

PHRM 145. Pharmacology and Medicinal Chemistry III. 4 Units.
The third course in the Pharmacology and Medicinal Chemistry series covers the effects of cardiovascular, endocrine, cancer chemotherapy, immunologic therapeutic agents and the mechanisms whereby these effects are induced. Drug classes are presented to illustrate the effects of drug classes in the treatment of diseases. Prerequisite: a passing grade in all required courses in Semester 1 to 3 in the Doctor of Pharmacy program.

PHRM 146. Therapeutics I Neuro-Psychiatry. 4 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with specific conditions, diseases, disorders, and drug-induced problems that utilize basic and applied pharmaceutical science abilities. Lectures, readings and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients. Prerequisite: a passing grade in all required courses in Semesters 1 to 3 in the Doctor of Pharmacy program.

PHRM 147. Therapeutics II GI/Hepatic/Nutrition. 2 Units.
Students develop the abilities to assess and develop patient-specific cares plans for patients with gastrointestinal, hepatic, nutrition, and anemia conditions, diseases, disorders, and drug-induced problems that utilize basic and applied pharmaceutical science abilities. Lectures, readings and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients. Prerequisite: a passing grade in all required courses in Semester 1 to 3 in the Doctor of Pharmacy program.

PHRM 148. Therapeutics III Cardiology. 4 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with specific cardiovascular diseases that utilize basic and applied pharmaceutical science abilities. Lectures, readings, and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program.

PHRM 149. Hospital IPPE. 2 Units.
Hospital introductory pharmacy practice experience are a method to enhance each student’s understanding of the role and responsibilities of pharmacists in the institutional setting and to gain experience with the medication use system and with other health care providers within a hospital. Prerequisites: passing grade in all required courses in Semester 1 and 2 of the Doctor of Pharmacy program. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license.
Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PHRM 151. Pharmacoeconomics, Benefits and Outcomes. 2 Units.
This course describes and applies economic-based evaluation methods to pharmaceutical products, treatments and services. Content includes understanding principles which help decision makers maximize clinical and/or humanistic outcomes given economic constraints. Additionally, this course provides an introduction to managed care and Medicare and its role in US health care delivery. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program.

PHRM 152. Pharmacy Law and Ethics. 3 Units.
Discussions and analysis of federal and state law, regulations, standards of practice, case law and ethics related to pharmacy practice and drug development and distribution. The focus is California laws and regulations that govern the practice of pharmacy in community and institutional settings. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program.

PHRM 155. Therapeutics IV Cardiology. 4 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with specific cardiovascular diseases that utilize basic and applied pharmaceutical science abilities. Lectures, readings, and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program.

PHRM 157. Therapeutics IV Renal/Respiratory. 3 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with renal and respiratory diseases. Lectures, readings, and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients with renal and respiratory-related issues. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program.

PHRM 158. Practicum III. 1 Unit.
Problem solving and critical thinking skills are developed through the discussion and solution of complex cases and problems, with a focus on patients with multiple disorders and patients from various cultures or diverse populations and pediatric and geriatric populations. Problem solving and critical thinking skills are also developed through the discussion and solution of cases and problems that involve the clinical pharmacokinetics of select drugs, which include the determination and documentation of initial dosing recommendations, dosage adjustments, drug concentration predictions, and monitoring plans. Prerequisite: a passing grade in all required courses in Semesters 1 to 4 in the Doctor of Pharmacy program. Prerequisites, may be taken concurrently: PHRM 156 and PHRM 157.
PHRM 159. Community II IPPE. 2 Units.
Community II introductory pharmacy practice experiences are a method to enhance each student’s understanding of the role and responsibilities of pharmacists in the community setting and to gain experiences with the medication use system within a community pharmacy and expand the abilities developed in Community I introductory pharmacy practice experience. Prerequisites: a passing grade in all required courses in Semesters 1 and 2 of the Doctor of Pharmacy program. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PHRM 160. Practice-Based IPPE. 2 Units.
The Practice-Based introductory pharmacy practice experience is another method to enhance each student’s understanding of the role and responsibilities of pharmacists and medication distribution and use process in any one of a variety of pharmacy practice settings. Successful completion of this course satisfies completion of PHRM 159.

PHRM 161. Pharmacy Management. 2 Units.
Students study the analysis of financial management principles applicable to pharmacy practice which includes an analysis of human resources management applicable to pharmacy practice. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program.

PHRM 165. Therapeutics V Infectious Diseases. 4 Units.
Infectious Disease Therapeutics is an integrated course where students are taught to bring Medical Microbiology, Pharmacology, Physiology, Immunology, Pharmacokinetics, Pharmacodynamics and Chemotherapeutics together in order to care for patients with treatable infectious diseases. Students develop the ability to assess and develop patient-specific care plans for patients with infectious disease conditions, that include prevention and drug-induced problems that utilize applied pharmaceutical science principles and knowledge. Lectures, readings, presentations and discussions enable students to develop the ability to assess, manage, and document therapeutic care plans of varying complexity for patients with infectious diseases. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program.

PHRM 166. Therapeutics VI Oncology/Transplantation. 3 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with specific conditions, diseases, disorders of cancers and transplants and drug-induced problems that utilize basic and applied pharmaceutical science abilities. Lectures, readings, and discussion enable students to develop the abilities to assess, manage, and document simple to complex patients with cancers or transplants. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program.

PHRM 167. Therapeutics VII Endocrine/Musculoskeletal. 4 Units.
Students develop the abilities to assess and develop patient-specific care plans for patients with endocrine, musculoskeletal, pain, dermatologic, and ophthalmic conditions, diseases, disorders, and drug-induced problems that utilize basic and applied pharmaceutical science abilities. Lectures, readings, and discussion enable students to develop the abilities to assess, manage, and to document simple to complex patients. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program.

PHRM 168. Practicum IV. 1 Unit.
This course is a continuation of Practicum III. Problem solving and critical thinking skills are developed through the discussion and solution of complex cases and problems that focus on patients with multiple disorders and patients from various cultures or diverse populations and pediatric and geriatric populations. Problem solving and critical thinking skills are also developed through the discussion and solution of cases and problems that involve the clinical pharmacokinetics of select drugs, including the determination and documentation of initial dosing recommendations, dosage adjustments, drug concentration predictions, and monitoring plans. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program. Prerequisites, may be taken concurrently: PHRM 165, PHRM 166, PHRM 167.

PHRM 169. Health Care Outreach IPPE. 1 Unit.
Community health care outreach introductory pharmacy practice experiences are a method to enhance each student’s understanding, participation, and commitment to enhancing the health of the public. Groups of students work with community agencies and organizations in the development, organization, management, implementation, delivery, and assessment of health care outreach activities in local communities. Many of these activities are managed through professional student organizations. Students also reflect on their activities to determine the impact of those activities on the public and on themselves. Prerequisite: a passing grade in all required courses in Semesters 1 to 5 in the Doctor of Pharmacy program. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PHRM 171. Internal Medicine APPE. 6 Units.
This clinical pharmacy practice rotation at an affiliated health care facility emphasizes the medical management of disease states, rational drug therapy, and patient monitoring that use the pharmaceutical care practice model. Prerequisites: a passing grade in all required courses and 4 units of elective courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for entry into advanced pharmacy practice experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student photo release form.
PHRM 172. Ambulatory Care APPE. 6 Units.
This clinical pharmacy practice rotation at an affiliated clerkship site has an emphasis on providing pharmaceutical care for ambulatory care patients, that include the medical management of disease states, rational drug therapy, and patient monitoring. Prerequisites: a passing grade in all required courses and 4 units of elective courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for entry into advanced pharmacy practice experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student phot release form.

PHRM 173. Hospital Care APPE. 6 Units.
This hospital pharmacy practice rotation at an affiliated clerkship site enhances experiences in selecting drug products, compounding, dispensing, monitoring and evaluation, as well as understanding pharmacy operations and administration, communicating with patients and other health professionals, and providing drug information. Prerequisites: a passing grade in all required courses and 4 units of elective courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for progression into Advanced pharmacy Practice Experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student phot release form.

PHRM 174. Community Pharmacy APPE. 6 Units.
The Advanced Pharmacy Practice Experience in Community Pharmacy Practice is designed to provide students hands-on experience in selecting drug products, compounding, dispensing, monitoring and evaluating, communicating with patients, communicating with other health professionals, drug information, public health, and pharmacy operations and management. This required experiential learning rotation allows students to integrate their pharmacy knowledge with patient care skills, further develop effective communication skills, develop pharmacy management skills, and engage in innovative practice experiences when possible. Students actively participate in the day-to-day activities that comprise the work of a pharmacist who practices in the community setting. In addition, students have the opportunity to engage in pharmacy practice activities that include pharmacy management, medication therapy management and other pharmaceutical care services, and health promotion and preventive care services. Prerequisites: a passing grade in all required courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for progression into Advanced Pharmacy Practice Experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student phot release form.

PHRM 175. Advanced Pharmacy Practice Experience Capstone I. 1 Unit.
This is the first of a required, two-semester sequential course for pharmacy students during their advanced pharmacy practice experience. This course is designed to: 1) prepare students for practice in the profession of pharmacy, 2) build upon didactic knowledge gained previously in the Doctor of Pharmacy program, and 3) help students become life-long learners through self-assessment and reflection on learning. Course activities will include but are not limited to board exam preparation, quizzes, case presentations, disease state and/or drug information presentations/discussions, journal club presentations, self-reflection assignments, and/or guest lectures by pharmacists and other healthcare practitioners in addition to other region-specific activities. Prerequisites, may be taken concurrently: PHRM 171, PHRM 172, PHRM 173, PHRM 174, PHRM 184 or PHRM 185 and satisfy academic standards and the institution’s policies and procedures for progression into Advanced Pharmacy Practice Experiences.

PHRM 176. Advanced Pharmacy Practice Experience Capstone II. 1 Unit.
This is the second of a required, two-semester sequential course for pharmacy students during their advanced pharmacy practice experiences. This course is designed to: 1) prepare students for practice in the profession of pharmacy, 2) build upon didactic knowledge gained previously in the Doctor of Pharmacy program, and 3) help students become life-long learners through self-assessment and reflection on learning. Course activities will include but are not limited to board exam preparation, quizzes, case presentations, disease state and/or drug information presentations/discussions, journal club presentations, self-reflection assignments, and/or guest lectures by pharmacists and other healthcare practitioners in addition to other region-specific activities. Prerequisite: PHRM 175 with a "C" or higher. Prerequisites, may be taken concurrently: PHRM 171, PHRM 172, PHRM 173, PHRM 174, PHRM 184 or PHRM 185.
PHRM 177. Preparatory Advanced Pharmacy Practice Experience. 2 Units.
A preparatory Advanced Pharmacy Practice Experience (APPE) with emphasis on identifying and remediating deficiency (knowledge and/or practice skills) to better prepare students who have failed at least one APPE and have successfully completed any remediation or developmental courses, activities and assessment requirements set forth by the School. Prerequisites: a passing grade in all required courses in Semesters 1 to 6 in the Doctor of Pharmacy program, Good academic standing or by permission if on academic probation, prior failure in at least one APPE, successful completion of any required remediation courses, activities and/or assessments, meet the minimum site and APPE requirements.

PHRM 184. APPE Elective I. 6 Units.
This is the first of two elective advanced pharmacy practice experiences that allow the student to explore and develop abilities in an area of interest within the health care industry. This experience may be in a variety of biomedical settings that include patient care, administrative, health care system, public health, governmental agency, professional organization, research, academic, pharmaceutical company, and other biomedical or health related settings. Prerequisites: a passing grade in all required and 4 units of elective courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for progression into Advanced Pharmacy Practice Experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student photo release form.

PHRM 185. APPE Elective II. 6 Units.
This is the second of two elective advanced pharmacy practice experiences that allow the student to explore and develop abilities in an area of interest within the health care industry. This experience may be in a variety of biomedical settings including patient care, administrative, health care system, public health, governmental agency, professional organization, research, academic, pharmaceutical company, and other biomedical or health related settings. Prerequisite: Successful completion of (passing grade in) all required courses and 4 units of elective courses in semesters 1 to 6 of the Doctor of Pharmacy program. Students must satisfy academic standards for progression into Advanced Pharmacy Practice Experiences. Meet the minimum site and APPE requirements, including but not limited to criminal background checks, drug and Tuberculosis screenings, up to date personal immunizations for healthcare provider, annual completion of University approved HIPAA training course, APha immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance, and signed student photo release form.

PHRM 191. Independent Study. 1-4 Units.

**Physiology Pharmacology Courses**

PHYP 111. Veterinary Pharmacology. 2 Units.
Students examine the application of pharmacology to the problems of animal health. The course is one two-hour lecture per week.

PHYP 113. Teaching Anatomy, Physiology and Pathophysiology Laboratory. 1 Unit.
This course provides academic credit for second-year PharmD students who assist with teaching laboratory and discussion sessions for first-year Anatomy, Physiology, and Pathophysiology courses. Assistance may be for demonstrations, wet laboratory procedures, or discussion sessions for PharmD courses taught by faculty in the Physiology & Pharmacology Department. Prerequisites: PHRM 122 or PHRM 123 with a C or better; permission of instructor; must not be on probation or received no credit in required pharmacy courses. The course may be repeated twice for credit.

PHYP 114. Teaching Anatomy and Physiology Laboratory II. 2 Units.
This course provides academic credit for second year students who assist with teaching laboratory and discussion sessions for first-year Anatomy and Physiology courses. Assistance may be for demonstrations, wet laboratory procedures, or discussion sessions in PHAR 125. Students must receive a grade of “C” or better in the course in which teaching assistance is provided. Permission of instructor.

PHYP 130. Science Education Experiences (SEE). 2 Units.
The course prepares second year pharmacy students for outreach to elementary school classrooms to teach science information and concepts. Students receive training to prepare for the classroom environment and then make 6-7 visits to assigned classrooms to present science information and direct hands-on science activities. Open to second year students in the Doctor of Pharmacy program with good academic standing.

PHYP 141. Parkinson's Disease Research. 1-4 Units.
This elective course is for students wishing to pursue scientific research into the neurobiology and genetics of Parkinson’s disease. Credits are by arrangement and will be determined at the beginning of each semester by the nature of the research project and by the time schedule of each student. Students are expected to commit to 3 hours of lab research per week per unit, with the understanding that the numbers of hours of units will be directly proportionate to the relative complexity of the assigned research project. Participation will be documented by the students and by the instructor. Prerequisites: Doctor of Pharmacy student or permission of instructor.

PHYP 142. Pharmacogenomics. 1 Unit.
This elective course will introduce basic concepts, clinical applications and ethical considerations of pharmacogenomics. Students will learn about the genetic basis of inter-individual variability in response to drugs and drug pharmacokinetics, and how pharmacotherapy can be individualized based on a person’s genetic makeup to optimize its effectiveness and minimize adverse effects. Prerequisite: Second year Doctor of Pharmacy student or permission of instructor.

PHYP 149A. Special Topics. 1-4 Units.

PHYP 149B. Special Topics. 1-4 Units.

PHYP 158. Fundamentals of Toxicology. 2 Units.
An introduction to the general principles of toxicology. The toxic effects of various classes of non-medical chemicals are discussed with emphasis on the mechanisms of action, sites of action, signs and symptoms of toxicity and the treatment of toxicity. Prerequisites: PHRM 135 and PHRM 136.

PHYP 193. Undergraduate Independent Study. 1-5 Units.
This independent study course involves library and laboratory work and the writing of a report. Permission of the instructor.
### Pharmaceutics Med. Chem Courses

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<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
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<tbody>
<tr>
<td>PMED 097</td>
<td>Independent Research.</td>
<td>1-5</td>
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<tr>
<td>PMED 097A</td>
<td>Independent Research.</td>
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<tr>
<td>PMED 111A</td>
<td>Teaching the Pharmaceutical Dosage Forms Laboratory.</td>
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<td>PMED 121</td>
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<td>PMED 129</td>
<td>Dynamics of Student Leadership.</td>
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<td>PMED 131</td>
<td>Introduction to Dermatology.</td>
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<tr>
<td>PMED 132</td>
<td>Bench Research in Protein Chemistry and Molecular Biology.</td>
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<td>PMED 138</td>
<td>Lectures in Nuclear Pharmacy Science.</td>
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<td>PMED 143</td>
<td>Facilitating Molecular and Cellular Biochemistry (MCB) Lab Sessions.</td>
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<td>PMED 153</td>
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<td>PMED 164</td>
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<td>PMED 193</td>
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<td>PMED 196F</td>
<td>Independent Study.</td>
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### Pharmacy Practice Courses

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<tbody>
<tr>
<td>PRAC 070</td>
<td>Clinical Experience Rotations.</td>
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<tr>
<td>PRAC 101</td>
<td>Pharmacy Orientation.</td>
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<tr>
<td>PRAC 120</td>
<td>Advanced Immunizations: Immunology and Influenza.</td>
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<td>PRAC 124</td>
<td>Developing Consumer Fact Sheets.</td>
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<td>PRAC 127</td>
<td>Teaching the Drug Information Lab.</td>
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<tr>
<td>PRAC 127A</td>
<td>RxTract Writer.</td>
<td>1</td>
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<tr>
<td>PRAC 127B</td>
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<td>1</td>
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<tr>
<td>PRAC 127C</td>
<td>RxTract Writer.</td>
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### Pharmacy Programs

- PMED 097. Independent Research. 1-5 Units.
- PMED 097A. Independent Research. 1-5 Units.
- PMED 111A. Teaching the Pharmaceutical Dosage Forms Laboratory. 1 Unit.
  - This course is designed to train pharmacy students to supervise a laboratory as a teaching assistant. This course is open to students who have completed all first year courses and are in good standing.
- PMED 111B. Teaching the Pharmaceutical Dosage Forms Laboratory. 1 Unit.
  - A course designed to train pharmacy students in supervising a laboratory as a teaching assistant. This course will be open to students who have completed all first year courses and are in good standing.
- PMED 121. Professional Communications and Interviewing. 1 Unit.
  - This course instructs students on the principles of professional communication and interviewing. After appropriate training, students participate in different aspects of the interview of candidates for the pharmacy program. At the end of their participation, students evaluate the program. Prerequisite: Doctor of Pharmacy Student.
- PMED 122. Teaching Assistant for Professional Communications and Interviewing. 2 Units.
  - This course enables students to participate at a coordinator level in the process of professional communications and interviewing. Students are assigned specific coordinator roles and work in cooperation with the Office of Student and Professional Affairs, other students, and faculty in fulfilling those roles. Open to second year Doctor of Pharmacy students. Prerequisite: PMED 121.
- PMED 129. Dynamics of Student Leadership. 2 Units.
  - Students explore and apply of basic leadership theories and processes which foster personal and interpersonal development via cognitive experiential classroom methods and mentoring relationships with experienced peer leaders. Professional standing.
- PMED 131. Introduction to Dermatology. 2 Units.
  - This course is an integrated study of dermatological disorders with emphases on triage, medication options, and pharmaceutical care. Prerequisites: PHRM 112 and PHRM 115. Professional standing.
- PMED 132. Bench Research in Protein Chemistry and Molecular Biology. 1 or 2 Unit.
  - This elective course provides bench research experience for 1st and 2nd year pharmacy students and undergraduate students. Research will be related to biochemistry, protein chemistry, and molecular biology. Emphasis will be on the rationale and hypothesis for the experiment. Students will have hand on experience to conduct experiments and opportunities to present findings. Prerequisite: Permission from instructor.
- PMED 138. Lectures in Nuclear Pharmacy Science. 3 Units.
  - Students study radioactivity, radionuclides, and nuclear radiations. Topics include methods of detection and measurement of radiations as well as basic rules of use for nuclides and radioactive material.
- PMED 143. Facilitating Molecular and Cellular Biochemistry (MCB) Lab Sessions. 2 Units.
  - This course provides academic units for second-year students who assist with teaching/facilitating laboratory discussion sessions for first-year Molecular and Cellular Biochemistry (MCB) students. Open to second year PharmD students. Prerequisite: PHRM 113 with an "A" and permission of instructor.
- PMED 153. Pharmaceutical Compounding. 2 Units.
  - Students study current compounding practice, regulations governing compounding, USP recommendations and making compounded products with evaluation and analysis as is currently part of a pharmacy practice. Prerequisites: PHRM 134, PHRM 135, PHRM 136 with a "D" or higher; PHRM 138 with a "C" or higher; PHRM 139. Professional standing.
- PMED 164. Advances in Applied Pharmacokinetics. 2 Units.
  - This course offers a systematic approach to a rational application of basic pharmacokinetics to patient specific clinical practice.
- PMED 184. Complications in Applied Pharmacokinetics. 1 Unit.
- PMED 193. Undergraduate Independent Study. 1-5 Units.
  - This course is independent study that involves library and/or laboratory.
- PMED 196F. Independent Study. 1-4 Units.
PRAC 127D. RxTract Writer. 1 Unit.
Students write and publish pharmacotherapy reports in a newsletter format.

PRAC 127E. RxTract Writer. 1 Unit.
Students write and publish pharmacotherapy reports in a newsletter format.

PRAC 127F. RxTract Writer. 1 Unit.
Students write and publish pharmacotherapy reports in a newsletter format.

PRAC 130. Practice of Pharmacy- A Multicultural and International Approach. 1-2 Units.
The focus of this course is to develop a culturally competent and multifaceted approach to patient care in a diverse cultural and dynamic healthcare setting. This course takes into consideration the various health and illness needs, religious beliefs, complementary health practices, cultural orientation of various ethno cultural groups as well as the dynamics of transcultural communications between patients and healthcare professionals. Prerequisite: successful completion of semester 1 in the Doctor of Pharmacy program or permission of instructor.

PRAC 131. Managed Care: P&T Competition. 1-2 Units.
This course focuses on the practical and hands-on skills of formulary management through understanding the steps involved in evaluating the AMCP (Academy of Managed Care Pharmacy) Dossier format of pharmaceutical products, literature search and evaluation, interpreting pharmacoeconomic/cost-impact analysis, Comparative Effectiveness Research (CER), monograph creation and presentation to a Pharmacy and Therapeutics (P&T) Committee. Open to Doctor of Pharmacy students only.

PRAC 132. Advanced Immunizations: Introduction to Travel Medicine. 1 Unit.
Introduction to the practice of travel medicine with an emphasis on vaccines and pharmacological prophylaxis and treatment of tropical diseases. Prerequisites: PHRM 111, PHRM 112, PHRM 113, PHRM 114, PHRM 115, PHRM 118; certification through APhA’s Pharmacy Based Immunization Delivery training program.

PRAC 133. Adv IMM Introduction to Travel Medicine II. 1 Unit.
An introduction to the practice of travel medicine with an emphasis on parasitic and non-vaccine preventable tropical diseases. Prerequisites: PHRM 118, certification through APhA’s Pharmacy Based Immunization Delivery training program. Prerequisite, may be taken concurrently: PRAC 132.

PRAC 134. Past, Present and Future of Vaccine Preventable Diseases. 1 Unit.
A general overview of the successes and issues surrounding vaccine preventable diseases with topics ranging from small pox eradication to the therapeutic use of vaccines for non-infectious diseases. Prerequisite: PHRM 118.

PRAC 135. Student Journal Club. 2 Units.
This elective course is designed to help students practice and master 1) literature retrieval and evaluation skills and 2) information dissemination skills that help prepare them for rotations and the rotation requirement of reviewing and presenting journal articles. Students select, review, analyze and present articles each week that are related to topics of interest in other courses they are taking. Prerequisite: PHRM 121 and 3rd semester standing (or higher) in the Doctor of Pharmacy program.

PRAC 136. Entrepreneurial Pharmacy Practice. 2 Units.
An overview of entrepreneurship in general, the traits of an entrepreneur, current topics in entrepreneurship with a specific focus on pharmacy practice and patient care programs. The course teaches the participants a comprehensive set of critical skills needed to develop a profitable business project. Preference is given to students enrolled in the Entrepreneurial Program. Prerequisite: PHRM 111.

PRAC 137A. RxTract Editor. 2 Units.
Students organize and edit reports that are published in a newsletter format. Prerequisite is enrollment as a second year PharmD student.

PRAC 137B. RxTract Editor. 2 Units.
Students organize and edit reports that are published in a newsletter format. Prerequisite is enrollment as a second year PharmD student.

PRAC 137C. RxTract Editor. 2 Units.
Students organize and edit reports that are published in a newsletter format. Prerequisite is enrollment as a second year PharmD student.

PRAC 138. Behavioral Medicine in Pharmaceutical Care. 2 Units.
Students study basic principles of behavior, behavioral medicine and health psychology. Application of these principles are studied and related to diabetes, asthma, chronic pain, cardiovascular disease and pain. Professional standing.

PRAC 139. Health Literacy: Fundamental Skills for Patient Care. 1-2 Units.
The course explore the link between literacy and health in the U.S. and how poor health literacy impacts access to health information and quality health care services. Students practice writing and speaking in plain language, and consider the Internet as a vehicle for achieving consumer health information literacy. The course provides an overview of the adult literacy system in the U.S. and explores opportunities for collaboration across fields. Prerequisites: PHRM 111, PHRM 112, PHRM 115, PHRM 118.

PRAC 140. Healthcare Finance: Pharmacy Applications. 2 Units.
Healthcare Finance offers an introduction to accounting, financial theory and practice in health care settings. It is designed to familiarize students with financial concepts and issues that confront managers in the health and pharmaceutical sectors. Second year standing in the Doctor of Pharmacy program or permission of instructor.

PRAC 141. Medicare Part D and MTM - Application and Outreach. 2 Units.
This course focuses on examining the Medicare Part D prescription drug benefit, utilization of the Medicare Plan Finder Tool and Medication Therapy Management (MTM). We will also focus on incorporating patient-specific considerations and evaluate the economic implications of Medicare Part D plan selection by beneficiaries. We will also train students about the process and how to perform MTM.
PRAC 142. Intro to the Medicare Benefit & Medication Therapy Management. 2 Units.
A course which focuses on understanding the eligibility, structure, financing and administration of the Medicare benefit. The prescription drug benefit ('Part D') is discussed in detail and topics such as formulary requirements, restrictions, coverage determination and appeals are explored. Cost-minimization strategies including the late-enrollment penalty, Medicaid, the low-income subsidy, and pharmaceutical assistance programs are highlighted. Students also learn about the most common medications filled by Medicare beneficiaries, have a series of mini-modules on prevalent chronic conditions in the senior population, learn how to use the MTM billing platform and conduct MTM services. Prerequisites: Second year PharmD student or instructor permission. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunization for healthcare provider, annual completion of University approved HIPAA training course, APhA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PRAC 143. Health Care Outreach IPPE: Medicare Part D. 1 Unit.
Community health care outreach introductory pharmacy practice experiences are a method to enhance each student’s understanding, participation, and commitment to enhancing the health of the public, with a focus on enhancing Medicare beneficiary understanding and enrollment in a Medicare Part D prescription drug plan. Groups of students work to develop, organize, manage, implement, deliver, and assess Medicare Part community outreach activities in settings serving Medicare beneficiaries. This course is given in conjunction with PRAC 141 Medicare Part D - Fundamentals, Application and Outreach. Students also reflect on their activities to determine the impact of those activities on both the beneficiaries they serve and on themselves. Successful completion of this course satisfies completion of PHRM 169 Health Care Outreach Introductory Pharmacy Practice Experiences. Prerequisites: a passing grade in all required courses in Semester 1 of the Doctor of Pharmacy program or permission of the instructor, current Pharmacy Intern license, and current blood borne pathogen and CPR certifications. Corequisite: PRAC 141.

PRAC 149A. Special Topics. 1-4 Units.
PRAC 149E. Special Topics. 1-4 Units.
PRAC 149F. Special Topics. 1-4 Units.
PRAC 151. Intro to Pediatrics. 2 Units.
Students are introduced to the pediatric patient, physiologic considerations, population-specific disease states and pharmacotherapy. Prerequisites: successful completion of all courses in the first three semesters of current Doctor of Pharmacy curriculum and current enrollment in fourth semester coursework or higher.

PRAC 152. Practicum I Teaching Assistant. 1 Unit.
This course presents an opportunity for 2nd year pharmacy student to act as teaching assistants (TA) and to help teach and foster learning for 1st year professional students in the practicum course. The practicum experiences relate to effective patient counseling for the most commonly prescribed and select non-prescription medications, pulmonary devices, smoking cessation products, in addition to application of appropriate techniques for measurement of blood pressure, blood glucose, and administration of immunizations for adults. Prerequisite: Permission of the instructor and a grade of B or better (or grade of Pass/No Credit) in PHRM 118, pharmacy students in the 2nd year of their professional studies. Students must not be on probation and must not have failed or received no credit in any required pharmacy course.

PRAC 153. Introduction to Spanish for the Pharmacy Professional I. 1 Unit.
This elective course is designed to develop a beginning level competence in Spanish for use in pharmacy practice settings. Basic communication skills related to everyday situations in the pharmacy will be presented using lecture, interactive laboratory sessions, and online textbook listening and speaking exercises. Vocabulary, phrases, questions, patient assessment, and patient interview for basic conditions and OTC counseling will be presented and practiced. The goal of this course is not to develop fluency but to introduce the student to the Spanish language and its application in the pharmacy and also to develop a foundation for lifelong learning.

PRAC 154. Introduction to Spanish for the Pharmacy Professional I - Teaching Assistant. 1 Unit.
The course is designed to present an opportunity for pharmacy students who are fluent or proficient in the Spanish language to act as teaching assistants and assist other pharmacy students to learn Spanish for the Pharmacy Professional. Teaching assistants will meet with the instructor prior to each class session for class preparation and will then participate during class sections.

PRAC 155. Biotechnology and Product Development. 2 Units.
This course offers the students comprehensive information and insights about the science of biotechnology, as well as a focus on product development, and the differentiations of biological from drugs. Actual industry experiences are provided. The students also gain an understanding of key biological product attributes, and the business and science practices in the biopharma industry, plus regulatory issues. Through a student presentation, an understanding of a "Total Product Profile", is provided, which is essential in product development examining the clinical parameters of diseases in healthcare systems with the product applications, along with business potential of a biological product. Prerequisite: Second year Doctor of Pharmacy student.

PRAC 156. Opportunities in Pharmacy Practice. 1 or 2 Unit.
Students learn personal and business tools to make the transition from the academic environment to the daily practice of pharmacy, with an emphasis on entrepreneurship.

PRAC 157. Peer Tutoring and Mentoring. 1 Unit.
This course is designed to provide training for students to become effective tutors for courses in the Pharmacy curriculum and/or peer mentors for the Office of Academic Success and Instructional Support. Students will be in one of two tracks: tutoring for specific courses or serving as peer mentors for the OASIS office. Prerequisite: Cumulative GPA of 3.0 or better.
PRAC 158. Population Health Management Introductory Pharmacy Practice. 1 Unit.
Population health management introductory pharmacy practice experiences are a method to enhance each student’s understanding, participation, and commitment to enhancing the health of a population. Students will work with healthcare professionals with the VA Northern California Health Care System (VANCHCS) to coordinate, deliver and measure the effectiveness of population management activities. Students will utilize VA Dashboard to identify populations at risk. Students will contact and counsel those patients at risk, and document those discussions and recommendations in electronic health records under the supervision of a licensed pharmacist. Completion of this course will satisfy the requirements for PHRM 169. Prerequisites: PHRM 111, PHRM 112, PHRM 113, PHRM 114, PHRM 115, PHRM 118.

PRAC 159. Pharmaceutical Care for Ambulatory Care Clinic Patients. 1 Unit.
A course which focuses on education and actively involving students in the provision of pharmaceutical care provided to patients through our four clinics [asthma, osteoporosis & falls, pharm. care (which includes smoking cessation), and wellness] and our associated education, assessment, and interventional community programs. Prerequisites: Doctor of Pharmacy student. Meet the minimum site and IPPE requirements, including but not limited to criminal background checks, drug and tuberculosis screening, up to date personal immunization for healthcare provider, annual completion of University approved HIPAA training course, APHA immunization certificate, current blood borne pathogen certificate, current AHA CPR for healthcare provider certificate and valid pharmacy intern license. Complete experiential requirements also include but are not limited to proof of medical and auto insurance and signed student photo release form.

PRAC 160. Pain Management. 2 Units.
Students examine pharmaceutical care for the patient with pain disorders and focus on pathophysiology, pharmacology and toxicology, pain assessment skills, appropriate medication therapy, side effect management and non-medication management of these disorders. Prerequisites: successful completion of all courses in semesters 1-4 of the Doctor of Pharmacy program.

PRAC 161. Practicum II TA 1. 1 Unit.
This is the first of a two-semester course series. In this course, second year pharmacy students focus on preparing to serve as teaching assistants for students in PHRM 138 Practicum II through guided activities. Students are expected to serve as teaching assistants in the PHRM 138 Practicum II course in the following semester. Prerequisites: Second year Pharm.D. student. Permission from the instructor and a grade of "B" or better in PHRM 138. Students must be in good academic standing and not tutoring 1st year pharmacy students for PHRM 138. Student must not have failed any required pharmacy course.

PRAC 162. Practicum II TA 2. 1 Unit.
This is the second of a two-semester course series. In this course, second year pharmacy students serve as teaching assistants for students in PHRM 138. Prerequisites: Second year Pharm.D. student. Completion of PRAC 161. Permission from the instructor. Students must be in good academic standing and not tutoring first year pharmacy students for PHRM 138. Students must not have failed any required pharmacy course.

PRAC 164. Applied Therapeutics and Managed Care. 2 Units.
This course is a blend of therapeutics and pharmacoeconomics that apply the principles of outcome research situations in managed care (real-life situations). Open to second year students in the Doctor of Pharmacy program.

PRAC 166. Becoming an Advanced Practice Pharmacist (APP) Practitioner. 1 Unit.
This course will provide students with strategies to advance pharmacy practice and become an integral part of the inter-professional health care team. Prerequisite: First or Second year standing in the pharmacy program.

PRAC 167. Pursuit of Residency or Fellowship Opportunities I. 1 Unit.
This course will serve as an introductory course for the development of students who are interested in pursuing residency or fellowship opportunities. During the course students will learn about various aspects involved in post-graduate training focused on residency and fellowship opportunities. As the basis of residency and fellowship knowledge is developed, the course will tackle various aspects related to finding the right residency or fellowship as well as securing and excelling in the residency or fellowship application process. In addition, students will be linked to peers and mentors who are already pursuing residency/fellowship opportunities as well as alum during their post-graduate training.

PRAC 168. Introduction to Spanish for the Pharmacy Professional II. 1 Unit.
This elective course is designed to further develop competence in Spanish for use in pharmacy practice settings. Basic communication skills related to everyday situations in the pharmacy will be presented using lecture, interactive laboratory sessions, and online textbook listening and speaking exercises. Vocabulary, phrases, questions, patient assessment, and patient interview for basic conditions and OTC counseling will be presented and practiced. The goal of this course is to continue to develop pharmacist skills using the Spanish language and its application in the pharmacy and also to develop a foundation for lifelong learning. Prerequisite: PRAC 153 with a 'C' or higher.

PRAC 169. Introduction to Spanish for the Pharmacy Professional II - TA. 1 Unit.
This course is designed to present an opportunity for pharmacy students who are fluent or proficient in the Spanish language to act as teaching assistants and assist other pharmacy students to learn in the class Spanish for the Pharmacy Professional. Teaching assistants will meet with the instructor prior to each class session for class preparation and will then participate in and lead class sessions. Prerequisites: First or second year standing in the pharmacy program. Current fluency or proficiency in Spanish as demonstrated to the course instructor. Students must not be on probation and must not have failed or received no credit in any required pharmacy course. Enrollment as a Spanish teaching assistant will be by permission of the instructor.

PRAC 193. Undergraduate Independent Study. 1-5 Units.
This independent study course involves library, conference and clinical studies in clinical pharmacy. Students may re-elect for a maximum of three units. Permission of instructor.

PRAC 197. Independent Research. 1-4 Units.