

COLLEGE OF PHARMACY

The Oregon State University College of Pharmacy's Doctor of Pharmacy (PharmD) Program is accredited by the Accreditation Council for Pharmacy Education (<http://www.acpe-accredit.org/>), 135 S. LaSalle Street, Suite 4100, Chicago, IL 60603-4810, 312-664-3575, 800-533-3606; Fax, 312-664-4652. The PharmD degree is jointly conferred by Oregon State University and Oregon Health & Science University. The Oregon State University College of Pharmacy is a member of the American Association of Colleges of Pharmacy. The College of Pharmacy is dedicated to advancing societal health through leadership in pharmacy education, research, community engagement, and improved patient care.

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Faculty

Professors Bearden, Block (Emeritus), Christensen, Kioussi, Kradjan (Emeritus), Leid, Mahmud, Olyaei, Stevens, Williams, Zabriskie

Associate Professors Alani, DeLander, Filtz, Furuno, Hartung, Haxby, Indra, Ishmael-Leid, McGregor, McPhail, Munar, P. Proteau, Singh

Assistant Professors Anderson, Coon, Herink, Irwin, Lee, Morgun, Philmus, S. Ramirez, Sahay, Sikora, Suchy, Sun, Taratula, Zumach

Senior Instructor I Linares

Senior Instructor II Zweber

Instructors Bowers, Russell, Schnabel, Starwalt

Professional Faculty Austin Haney, Beaumont, Clark, Corwin, Mettie, Ostrogorsky, Peters, J. Ramirez

Research Faculty

Professor, Sr. Research Simonson

Assistant Professors, Sr. Research G. Indra, Taratula, Yin, Zielke

College of Pharmacy

A petition from the pharmacists of Oregon led to the establishment of the Department of Pharmacy at Oregon State College in 1898. The

department grew steadily and in 1917 became the School of Pharmacy. In 1983, it became the College of Pharmacy.

There are many career options available to individuals having a pharmacy degree. Some graduates are employed in privately owned or chain pharmacies and practice in a community setting while others practice in hospitals or nursing homes. The pharmaceutical industry offers careers in many areas including sales, marketing, public and government relations, manufacturing, and basic research. Pharmacy graduates are also employed in various local, state and federal health agencies, including the U.S. Public Health Service and the Department of Veterans Affairs. Individuals who decide to acquire advanced professional or graduate training may follow a career in research and academics.

College of Pharmacy graduates are eligible for licensure as pharmacists throughout the United States.

Courtesy Faculty and Preceptors

The College of Pharmacy utilizes practicing pharmacists, physicians, and pharmaceutical scientists as lecturers in the professional pharmacy program and in the college's graduate education program. This group includes over 400 pharmacy preceptors. These individuals make a very important and significant contribution to the educational programs of the college.

Pharmacy Information

Professional pharmacy education has advanced both in Oregon and throughout the United States in order to meet the expectations of an evolving health care system. To be eligible for admission to the PharmD program, students must complete the PharmD prerequisites, which will require three to four years of college study. Completion of the pharmacy professional program requires an additional four years.

After completion of the four-year professional pharmacy program, the graduate is eligible to take a licensing exam administered by state boards of pharmacy. After passing the licensing exam and completing required internship training, the graduate is licensed to practice as a registered pharmacist. While time requirements may vary from state to state, most graduates become licensed as pharmacists approximately three months after graduation from Oregon State University.

PharmD Prerequisites

Required PharmD prerequisites may be taken at Oregon State University or any other accredited college or university. The PharmD prerequisites must be completed prior to beginning the professional program.

Required courses must be taken for a letter grade; however, an exception may be made if a course is only offered pass/no pass. The student should make a specific request for waiver of grade requirement directly to the College of Pharmacy Admissions Committee prior to taking the course.

Students from community colleges, other colleges and universities, may transfer to OSU at any time to complete the PharmD prerequisites.

For more information on the prerequisites, please visit our website, <http://pharmacy.oregonstate.edu/pharm-d-prerequisites>.

Early Assurance Program

The Early Assurance Program is intended to guarantee highly qualified students admitted to Oregon State University the opportunity to enter the

College of Pharmacy Doctor of Pharmacy (PharmD) program after the successful completion of the program prerequisites and the maintenance of certain academic criteria.

Further information on eligibility and the admissions process is available at <http://pharmacy.oregonstate.edu>.

The Professional Pharmacy Program

Enrollment in the four-year professional program is limited. Students must apply for admission to the professional pharmacy program. Application information and forms are available at <http://www.pharmacas.org/>. Contact the OSU College of Pharmacy for other information or visit the college website at <http://pharmacy.oregonstate.edu/>. Students are admitted to the professional program beginning fall term only.

Once admitted to the professional program, each student is assigned a faculty advisor. Students may register only for those courses for which they have completed the stated prerequisite courses. Exceptions are allowed only after approval by the College of Pharmacy's Academic and Professional Standards Committee. Students will complete the first two years of their course work on the Oregon State University campus. The third professional year will be at the College of Pharmacy Satellite Campus at Oregon Health and Science University in Portland, Oregon. Most students choose to live in the Portland area during the third year. The fourth year will be off-campus at various pharmacy practice sites throughout the state of Oregon and the Northwest, including Hawaii. Contact the college directly for additional information about the PharmD curriculum.

Immunization and vaccination requirements for PharmD students are stricter than for other university students. PharmD students must satisfy all college immunization and vaccination requirements before starting classes and each year in the program. Failure to meet these requirements may delay enrollment.

The four-year professional pharmacy program provides a broad, scientifically based, clinically focused education. Through appropriate selection of professional elective courses in the fourth year, a student may concentrate in such areas as community, institutional, geriatric, or managed care pharmacy; or prepare for graduate study.

The pharmacy profession is experiencing profound changes. These changes include an increased focus toward patient care, in addition to the study of pharmaceutical products. All students will be required to give immunizations (shots), take medical histories from patients, and perform physical examinations. These experiences will involve asking sensitive questions and physically touching other people. Throughout the curriculum, students are assigned to off-campus practice sites where they are supervised by licensed pharmacists who are affiliate faculty members of the college. Practice sites are located primarily throughout Oregon. Completion of practicum courses at these off-campus practice sites in the fourth professional year generally requires up to 40 hours per week at the practice site. Practicum experience may include nights, evenings, and weekends. Practice sites are varied but include community pharmacies, hospitals, long-term care facilities, and outpatient clinics. PharmD students are required to provide their own transportation to sites.

The College of Pharmacy requires all pharmacy students to complete criminal background checks and recommends that all pharmacy students submit to drug screening. Criminal background checks and drug screenings have become standard requirements for employment in a

pharmacy and placement in experiential rotations. Criminal background checks and drug screening may also be required for licensure. Students who cannot participate in experiential rotations due to criminal or other activities of concern that are revealed in criminal background checks or drug screenings may be unable to fulfill the requirements of the professional PharmD program. Therefore, it is in everyone's interest to resolve any issues prior to commitment of resources by the college and by students.

PharmD students must immediately disclose any criminal activity that occurs prior to or while enrolled in the PharmD program. PharmD students must immediately reveal any action taken by a Board of Pharmacy, including but not limited to warning, probation and revocation of licensure. Failure to do so could result in dismissal from the PharmD program.

To become licensed by the state of Oregon to practice pharmacy, an individual must meet at least three criteria:

1. Possess a baccalaureate or PharmD degree in pharmacy from an accredited U.S. college of pharmacy,
2. Pass the North American Pharmacist Licensing Exam (NAPLEX), the Multistate Pharmacy Jurisprudence Examination (MPJE), and
3. Complete the Oregon Board of Pharmacy internship requirements.

Professional Associations

Students are encouraged to join various professional organizations. At OSU, they may choose the following:

NCPA—National Community Pharmacists Association—Open to all students in pharmacy; affiliated with the national parent organization.

Academy of Students of Pharmacy—Open to all students in pharmacy; includes affiliation with the American Pharmaceutical Association and the Oregon State Pharmacists Association.

American Society of Health-System Pharmacists—Open to all students in pharmacy; includes membership in the Oregon Society of Health-System Pharmacists.

Rho Chi—Membership in Beta chapter of Rho Chi, national pharmaceutical honor society, is selective and based on high scholastic achievement.

Phi Delta Chi—Membership in the Beta Iota chapter of this 100-year-old national pharmacy fraternity is limited. Individuals must meet the pledge requirements.

Phi Lamda Sigma—Membership in the Beta Zeta chapter of the national fraternity is limited to qualified individuals who meet requirements for professional development and leadership.

AACP—American Association of Colleges of Pharmacy.

OSSP—Oregon State Student Pharmacists is an umbrella professional development organization for pharmacy students that includes membership in several national and state professional organizations.

Scholarships and Loans

Information about scholarships and loans is available from the College of Pharmacy website and the Office of Financial Aid and Scholarships, 541-737-2241.

WICHE Program

The College of Pharmacy accepts students supported through the Western Interstate Commission for Higher Education (WICHE) Professional Student Exchange Program. This interstate program provides the opportunity for students from the 12 cooperating states to obtain professional training not available in their home states. Residents from the states of Alaska and Nevada are eligible to apply for support in pharmacy.

To apply, the applicant must become "certified" by their home state. Applicants must apply to their home offices before October 15 prior to the academic year in which they plan to enroll. State certifying office contact information is available at <http://wiche.edu/psep/cert-off>.

Admission Standards

Equal Opportunity and Disability Accommodation

The College of Pharmacy, as a part of Oregon State University, is committed to the principle of equal opportunity. The college does not discriminate on the basis of race, color, creed, religion, national origin, gender, sexual orientation, age, marital status, disability, and disabled veteran or Vietnam-era veteran status. When requested, the college will provide reasonable accommodation to otherwise qualified students with disabilities. Disabled students must work with and be approved by the Disability Access Services office.

Essential Characteristics of Student Pharmacists

The essential characteristics of student pharmacists identified below are drawn from a number of different resources that govern the professional expectations of pharmacists and student pharmacists, including but not limited to the national Pharmacy Code of Ethics, the Oath of a Pharmacist, and the Pledge of Professionalism. Please see Appendices to view these resources. The essential characteristics are intended to ensure that student pharmacists and pharmacists educated at the College of Pharmacy (the "college") have the capacity to meet federal and state regulations and policies that pertain to pharmacy, and to meet or exceed expectations that the public has for professional competence and behavior among pharmacy professionals.

Academic and professional environments present different challenges, but the essential characteristics required to succeed in pharmacy are common to both settings. Students in the college must observe and fulfill the essential characteristics, which have been divided into the following relevant categories: intellectual ability, empathetic and collegial communication skills, psychomotor skills, respect for diversity, high ethical standards, and behavioral and social expectations. Under each category are examples that describe and clarify these essential characteristics.

Intellectual Ability

- Comprehend, interpret and analyze new information
- Reason and carry out evidence-based decision making
- Use critical thinking skills and problem solving to evaluate information from multiple sources and synthesize a plan of action
- Thrive in a rigorous foundational and clinical science-based curriculum
- Participate in self- and programmatic-assessment intended to sustain a continual improvement process
- Be curious and pursue lifelong learning

Empathetic and Collegial Communication Skills

- Formulate concise, accurate synopses of essential information
- Contribute in a meaningful and collaborative manner in group discussions
- Interact constructively with other members of a health care team
- Communicate difficult concepts orally and in writing at an appropriate level for specific patients or audiences
- Listen empathetically and develop rapport
- Appropriately display and interpret nonverbal communication signals
- Communicate fluently in English
- Effectively utilize resources to communicate in non-English languages

Psychomotor Skills ¹

- Participate effectively in preparation and distribution of sterile and non-sterile drug products
- Utilize and analyze information from varied sensory inputs
- Participate in drug administration, including injections
- Carry out tasks required for objective and subjective assessment of patient health
- Discern critical elements of a problem through observation

¹ Students may be able to be admitted and progress to graduation while not possessing selected psychomotor skills. In the instance of a documented disability, the college will work to provide reasonable accommodation. The absence of some skills, however, may limit the variety of settings in which a pharmacist can work.

Respect for Diversity

- Communicate in a manner that respects all individuals
- Proactively seek ways to provide an inclusive environment that addresses unique patient needs
- Provide care without judgment of a patients' personal choices or situation
- Individualize care with consideration of cultural norms for the patient
- Individualize care with consideration of unique therapeutic needs or challenges

High Ethical Standards

- Maintain confidentiality
- Act with compassion, empathy and altruism
- Accept responsibility and provide leadership
- Abstain from illicit drug use
- Act with integrity and expect the same of professional colleagues

Behavioral and Social Expectations

- Demonstrate a history of appropriate behavior in personal actions
- Perform effectively and display sound judgment while under stress
- Perform appropriately in academic or professional settings
- Address disagreements with tact and avoid public altercations
- Exhibit the capacity to adapt to change readily and adjust responses in dynamic, unpredictable situations
- Accept constructive criticism and adapt behavior

Requirements for Progression

Doctor of Pharmacy (PharmD) students must meet university requirements and standards and adhere to the university Student Conduct Regulations (<http://studentlife.oregonstate.edu/>)

studentconduct/). The College of Pharmacy faculty has adopted additional requirements to assure that all pharmacy graduates have the best possible educational background and preparation for their pharmacy practice careers. College of Pharmacy standards may vary from the university standards in order to ensure compliance with policies, regulations and expectations specific to the pharmacy profession.

Students are expected to meet specific academic and professional requirements to matriculate in the College of Pharmacy and to progress to each successive year of the professional program. Each student's standing in the College of Pharmacy is reviewed at the end of every term, or at any time in the interim 'for cause'. The review includes core pharmacy term GPA, cumulative GPA, and other characteristics identified as being essential to student pharmacists and pharmacists.

The professional PharmD degree program at Oregon State University is designed to be completed within four years. The program combines didactic courses, structured clinical practice opportunities, and, optimally, significant work experience to educate pharmacists that have both in-depth and up-to-date knowledge to be change agents in their chosen profession. In order to assure this current and in-depth knowledge base for each graduate, the professional program must be completed within a five-year period.

To begin the first professional year, students:

1. Must receive, and respond in a timely manner, to an offer of admission.
2. Must complete all pre-pharmacy courses with a grade of C– or better.
3. Must hold a current CPR and first aid certification from an approved provider.
4. Must successfully complete a background check following guidelines established by the college.
5. Must submit to the recommended drug screening or provide written acknowledgment of the potential consequences of declining the drug screening.
6. Must attend the first-year professional orientation program, and verify an understanding and acceptance of College of Pharmacy policies and procedures.
7. Must obtain an Oregon Pharmacy Intern License.
8. Must fulfill the essential characteristics of student pharmacists identified by the college.

To advance into the second professional year, students:

1. Must successfully complete all courses that are included in the curriculum of the first professional year, including electives with a cumulative pharmacy GPA of 2.00 and a P (Pass) in all P/N (Pass/No Pass) courses.
2. Must have no more than one D grade in pharmacy courses.
3. Must maintain a current Oregon Pharmacy Intern License.
4. Must have a current CPR certification from an approved provider.
5. Must fulfill the essential characteristics of student pharmacists identified by the college.

To advance into the third professional year, students:

1. Must successfully complete all courses that are included in the curriculum of the first two professional years, including electives with a cumulative pharmacy GPA of 2.00 and a P (Pass) in all P/N (Pass/No Pass) courses.
2. Must have no more than one D grade in pharmacy courses.

3. Must have completed two approved elective courses with a grade of C– or better in graded courses, or with a P in Pass/No Pass (P/N) courses.
4. Must successfully complete a background check during the summer preceding the third professional year
5. Must maintain a current Oregon Pharmacy Intern License.
6. Must have a current CPR certification from an approved provider.
7. Must have earned a bachelor's degree.
8. Must fulfill the essential characteristics of student pharmacists identified by the college.

To advance into the fourth professional year, students:

1. Must successfully complete all courses that are included in the curriculum of the first three professional years, including electives with a cumulative GPA of 2.00 and a P (Pass) in all P/N (Pass/No Pass) courses.
2. Must have no more than one D grade in pharmacy courses.
3. Must have completed three approved elective courses, one of which must be completed after the second professional year, with a grade of C– or better in graded courses, or with a P in Pass/No Pass (P/N) courses.
4. Must maintain a current Oregon Pharmacy Intern License. (Licensure in additional states may be required for students completing clerkships outside of Oregon.)
5. Must have a current CPR certification from an approved provider.
6. Must be willing to meet site specific requirements for all assigned clerkship rotations.
7. Must verify an understanding and acceptance of College of Pharmacy policies and procedures as they pertain to advanced experiential learning.
8. Must fulfill the essential characteristics of student pharmacists identified by the college.

To graduate with the PharmD degree, students:

1. Must have met all requirements defined for progression through each professional year.
2. Must successfully complete all required and elective advanced clerkships with a passing grade.
3. Must fulfill the essential characteristics of student pharmacists identified by the college.

Student Standing in the College of Pharmacy

The Academic and Professional Standards Committee ("APSC") may, at any time, review a student's standing in the college. APSC is charged with ensuring that students are aware of academic performance or behavior which is not consistent with essential characteristics of student pharmacists and that, therefore, places their completion of the PharmD program at risk. Academic performance and behavioral concerns are often evaluated independently but have equal significance in determining whether a student is meeting the essential characteristics of student pharmacists. Severe, continuing or repeated academic or behavioral problems can result in dismissal from the PharmD program.

APSC, when necessary, provides student standing information to communicate performance deficits, insufficient student progress, and lack of progress in a student addressing academic or behavioral

problems. APSC and the college's director of student services/head advisor provide students guidance regarding what the college expects from a student to increase their opportunities for success in the college. Student performance and progress are evaluated on a case-by-case basis, utilizing the experience of APSC members. APSC uses good faith, informed judgment to determine appropriate recommendations for each student's situation.

The following student standing notifications may be received by students who are demonstrating performance deficits or insufficient progress in the PharmD program:

Warning

Warning status is cautionary and identifies student performance which may place a student's completion of the PharmD program at risk.

Students are placed on warning status if they have a term core pharmacy GPA of less than 2.5 or receive 2 or more C grades in core or elective professional courses in a term. Students may also be placed on Warning status if they engage in behavior that does not meet the Essential Characteristics of Student Pharmacists.

- The first time students are placed on Warning status, they must meet with the Director of Student Services/Head Advisor to discuss their situation.
- The second time students are placed on Warning status, they must meet with the Director of Student Services/Head Advisor and develop a holistic action plan for overcoming academic and non-academic barriers to success. They must subsequently execute this action plan.
- The third time students are placed on Warning status, they are automatically placed on Probation.

Probation

Probation status identifies an academic or behavioral concern that places the student's completion of the PharmD program at serious risk. Probation may be accompanied by a delay in progression at the determination of the APSC.

Students are placed on Probation status if they have a term core pharmacy GPA of less than a 2.0 or if they receive a C- or lower grade in any core or elective professional course. A third warning automatically results in Probation.

Student behavior that is a significant departure from the Essential Characteristics of Student Pharmacists will also result in Probation status. Such behavior includes, but is not limited to, violations of Academic Integrity policies, criminal violations, repeated or intentional violation of college policies, or significant breaches of the University Student Conduct Code (see <http://studentlife.oregonstate.edu/studentconduct/>).

Students on Probation status must follow recommendations of the APSC and the Director of Student Services/Head Advisor. Students on Probation status must meet with the Director of Student Services/Head Advisor following each term to review their progress and standing in the college. Students that successfully fulfill the recommendations prescribed will be removed from Probation status.

Students that fail to follow or are unsuccessful in fulfilling the recommendations will be suspended and evaluated for dismissal from the college. Students who are placed on Probation status for the second time will also be evaluated for dismissal from the college.

Suspension

Students that have failed to make adequate progress, or who have displayed severe or repeated departures from the Essential Characteristics of Student Pharmacists, may be placed on Suspension status. The college will place an indefinite hold on the progression of a student placed on Suspension status until APSC can adequately evaluate whether the student will be allowed to continue in the PharmD program. Students engaged in an appeal of their dismissal from the college will also be placed on Suspension status.

Students placed on Suspension status will not be allowed to progress in the PharmD program. APSC will review the status of a student on Suspension no later than the beginning of the next academic term. After review, APSC may recommend immediate Dismissal from the college, recommend that the student be continued on Suspension status pending receipt of additional information, or prescribe a plan to address specific concerns that resulted in the student's Suspension status. If a plan for progression is developed by APSC, the student will be changed to Probation status. If at any time it becomes evident that the student will not be able to address concerns and graduate within the required five-year window, the student will be dismissed immediately.

Dismissal

Students will be dismissed from the professional program if they are not making adequate academic progress, or if they fail to constructively address professional or behavioral concerns.

Graduate

Majors

- Pharmaceutical Sciences (<http://catalog.oregonstate.edu/college-departments/pharmacy/pharmaceutical-sciences-ms-phd>)
- Pharmacy, Doctor of Pharmacy (<http://catalog.oregonstate.edu/college-departments/pharmacy/pharmacy-doctor-pharmacy-4-year-d-phar>)

Minors

- Pharmaceutical Sciences (<http://catalog.oregonstate.edu/college-departments/pharmacy/pharmaceutical-sciences-graduate-minor>)

Pharmacy

PHAR 001. SERVICE LEARNING. (0 Credits)

Engage in a service-learning or community engagement experience where skills and knowledge are applied to meet an authentic community-identified need. The experience will integrate meaningful community service with reflection. Through readings and discussions, students will critically reflect on the service in order to increase their understanding of their discipline, gain a broader appreciation of the discipline, enhance their sense of civic responsibility, and strengthen connections with communities.

This course is repeatable for 99 credits.

PHAR 002. LEADERSHIP. (0 Credits)

Provides students with basic personal and interpersonal leadership skills that can be used within and outside of a work setting. Through practice, the leadership experience help students explore motivation, decision-making, time management, power, team building, conflict, ethics, dealing with change, communication skills, and diversity issues.

This course is repeatable for 99 credits.

PHAR 201. PHARMACY ORIENTATION. (1 Credit)

Career opportunities in pharmacy including community and institutional practice, government, and industry. Discussion of available educational pathways. Open to non-pharmacy students. Graded P/N.

PHAR 210. TERMINOLOGY OF THE HEALTH SCIENCES. (2 Credits)

Provides the student in any of the health science disciplines or pre-professional studies with a working knowledge of the terminology used in the health sciences. Open to non-pharmacy students.

PHAR 401. RESEARCH. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 403. THESIS. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 405. READING & CONFERENCE. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 407. SEMINAR. (1-16 Credits)

One-credit section. Graded P/N.

This course is repeatable for 16 credits.

PHAR 501. RESEARCH. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 503. THESIS. (1-16 Credits)

This course is repeatable for 999 credits.

PHAR 505. READING & CONFERENCE. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 507. SEMINAR. (1-16 Credits)

One-credit section. Graded P/N.

This course is repeatable for 16 credits.

PHAR 525. FOUNDATIONS OF DRUG ACTION I. (3 Credits)

Introductory course presenting actions of chemicals on physiological systems. Concepts encompass drug absorption and distribution, drug design and characterization of drug interactions with specialized cellular components, and drug biotransformation or excretion.

PHAR 526. FOUNDATIONS OF DRUG ACTION III. (3 Credits)

Drug actions in the autonomic nervous system (ANS) provide a template for understanding drug actions throughout the body. This course provides a complete consideration of pharmacologic and medicinal chemistry principles as they relate to drug interactions with the ANS. Treatment options for selected diseases that respond to drugs acting on the ANS are also addressed.

PHAR 527. FOUNDATIONS OF DRUG ACTION II. (3 Credits)

Introductory course presenting actions of chemicals on physiological systems. Concepts encompass drug activation of biological response via biochemical or molecular transduction mechanisms, pharmacogenetics and pharmacogenomics, and drug-induced toxicities.

PHAR 537. BIOORGANIC CHEMISTRY. (3 Credits)

A contemporary treatment of the chemistry, enzymology and molecular genetics techniques used in studying major natural products biosynthesis pathways in nature. Offered alternate years.

Recommended: (CH 530, CH 531, CH 535) and (BB 590, BB 591, BB 592)

PHAR 563. CANCER AND CHEMOPREVENTION. (2 Credits)

A summary of mechanisms of cancer progression, how cancer is detected, and introduction to chemoprevention using targeted therapy and alternative medicine.

Recommended: (BB 451 or BB 551) and BI 314 and (BI 460 or BI 560) or second year standing in the PharmD program

PHAR 571. EXPERIMENTAL APPROACH TO BIOPHARMACEUTICS. (3 Credits)

Experimental protocol, rationale, and procedures in clinical pharmacokinetic, pharmacokinetic, and biopharmaceutical experiments.

Recommended: PHAR 750

PHAR 572. APPLIED BIOPHARMACEUTICS AND PHARMACOKINETICS. (3 Credits)

Pharmacokinetics and bioavailability of drugs in clinical care, including changing disease states.

PHAR 573. CURRENT TOPICS IN PHARMACEUTICAL SCIENCES. (1-3 Credits)

Critical evaluation of contemporary pharmaceuticals and pharmacokinetics research articles.

This course is repeatable for 9 credits.

PHAR 574. NANOMEDICINE. (3 Credits)

Introduction to the interdisciplinary field of nanomedicine, the use of nanoscale (1-100 nm) phenomena and materials in biomedical applications. Reviews the basic principles of nanotechnology relevant to areas such as diagnostic/molecular imaging, drug delivery, and other novel therapeutics. Topics will be described through both survey of historical developments and the latest scientific developments in the field of nanomedicine.

PHAR 591. PHARMACOLOGY I. (5 Credits)

Principles of pharmacology; molecular, cellular, and physiologic mechanisms of drug action; pharmacological rationale for therapeutic and toxicologic treatment outcomes.

PHAR 592. PHARMACOLOGY II. (5 Credits)

Principles of pharmacology; molecular, cellular, and physiologic mechanisms of drug action; pharmacologic rationale for therapeutic and toxicologic treatment outcomes.

PHAR 593. PHARMACOLOGY III. (5 Credits)

Principles of pharmacology; molecular, cellular, and physiologic mechanisms of drug action; pharmacologic rationale for therapeutic and toxicologic treatment outcomes.

PHAR 601. RESEARCH. (1-16 Credits)

This course is repeatable for 99 credits.

PHAR 603. THESIS. (1-16 Credits)

This course is repeatable for 999 credits.

PHAR 605. READING AND CONFERENCE. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 606. PROJECTS. (1-16 Credits)

This course is repeatable for 16 credits.

PHAR 669. INTRODUCTION TO GRANT PROPOSAL WRITING. (2 Credits)

To introduce students to the fundamentals of writing grant proposals to the National Institute of Health (NIH), different funding mechanisms, as well as the grant reviewing process. CROSSLISTED as VMB 669.

Equivalent to: VMB 669

This course is repeatable for 20 credits.

PHAR 699. SPECIAL TOPICS IN PHARMACEUTICAL SCIENCES. (3 Credits)

This course is repeatable for 99 credits.

PHAR 701. RESEARCH AND SCHOLARSHIP. (1-8 Credits)

Research conducted by professional pharmacy students under faculty supervision.

This course is repeatable for 12 credits.

PHAR 703. THESIS. (1-8 Credits)

Independent study and analysis that culminates in a thesis.

This course is repeatable for 999 credits.

PHAR 705. READING AND CONFERENCE. (1-8 Credits)

May be repeated for credit.

This course is repeatable for 12 credits.

PHAR 706. INTRODUCTION TO HEALTH DISPARITIES. (2 Credits)

An examination of the multifaceted issue of health disparities in the U.S. healthcare system. Marginalized groups with disparities based upon racial/ethnic, gender, sexual preference and identity, disability, physical and mental health, geography and socioeconomics will be examined at the individual, systematic, and institutional levels.

Recommended: PHAR 707

PHAR 707. CAREER PERSPECTIVES AND PROFESSIONAL DEVELOPMENT. (2 Credits)

Students will explore the necessary knowledge, skills, and abilities in order to support professional role formation and ongoing professional development. Students will practice skills related to identifying personal strengths and weaknesses, building self-awareness, creating and maintaining a robust professional development plan, communicating professionally in written and oral formats, participating as a team leader and team member, as well as fine-tuning relationship building skills.

Recommended: First-year standing in PharmD program

PHAR 708. INTRODUCTORY PHARMACY PRACTICE EXPERIENCES: COMMUNITY CARE I. (2 Credits)

Students engage in on-site experience in community pharmacy. Learning is focused on understanding the scope of practice and roles of pharmacy personnel, while demonstrating skills related to safe and legal drug procurement and distribution in the community setting. Students observe patient counseling, develop foundational expertise in OTC and prescription drug products, and conduct medication reviews to identify drug-related problems. In-class patient case discussions are coordinated with patient care topics in other first-year courses and explore legal, ethical and culturally sensitive decision-making. Graded P/N.

Recommended: Oregon pharmacy intern license, PHAR 707. Concurrent enrollment in PHAR 721 and PHAR 728

PHAR 709. INTRODUCTORY PHARMACY PRACTICE EXPERIENCES: COMMUNITY CARE II. (2 Credits)

Students engage in on-site experience in community pharmacy. Learning is focused on understanding the scope of practice and roles of pharmacy personnel, while demonstrating skills related to safe and legal drug procurement and distribution in the community setting. Students observe patient counseling, develop foundational expertise in OTC and prescription drug products, and conduct medication reviews to identify drug-related problems. In-class patient case discussions are coordinated with patient care topics in other first-year courses and explore legal, ethical and culturally sensitive decision-making. Graded P/N.

Recommended: Oregon Pharmacy Intern Licence and PHAR 708. Concurrent enrollment in PHAR 712 and PHAR 714 and PHAR 722

PHAR 711. FUNDAMENTALS OF INTERPROFESSIONAL COLLABORATION. (1 Credit)

The first professional year IPE Series is a yearlong course focusing on interprofessional education for students from local colleges (LBCC/ OSU/WesternU) representing programs in medical assistant, pharmacy, nursing and osteopathic medicine. Students develop a positive perspective of working with other disciplines, enhanced understanding of their specific role and responsibilities on an interprofessional team, recognize the value of other disciplines providing patient-centered care, and develop a shared accountability for providing patients with safe, high-quality health care.

Recommended: First-year standing in the PharmD program

PHAR 712. FOUNDATIONS OF PATIENT SAFETY AND INTERPROFESSIONAL PRACTICE. (1 Credit)

Techniques, best practices and opportunities for improving patient safety through interprofessional teamwork. Graded P/N.

PHAR 713. SPANISH FOR PHARMACY PROFESSIONALS. (2 Credits)

For the pharmacy professional with little or no Spanish language background (those with some Spanish language skills would find it beneficial). The course is presented in a video format with in-class facilitator for discussion. Provides basic Spanish grammar instruction but the focus will be on vocabulary and communication in a community pharmacy environment.

PHAR 714. COMPLEMENTARY MEDICINE. (3 Credits)

Covers vitamins and microminerals and their role in biochemical processes, maintaining health and preventing disease. The course also covers the etiology of obesity and treatment modalities. The course builds upon the general background of students in biochemistry and physiology to provide a common baseline of knowledge and allow for integration of concepts required to understand preventive medicine.

Recommended: PHAR 729 and PHAR 735

PHAR 715. PRESCRIPTION DRUG ABUSE. (2 Credits)

Examines the issue of prescription drug abuse among the general population. Graded P/N.

PHAR 716. HEALTHCARE CHALLENGES FOR PERSONS WITH DISABILITIES. (1 Credit)

Students develop an understanding of healthcare challenges faced by persons with physical and mental disabilities. Graded P/N.

This course is repeatable for 2 credits.

PHAR 717. SENIOR CARE PHARMACY. (2 Credits)

Provides an overview of senior care pharmacy practice including an introduction to the senior patient, the senior care healthcare environment, medication-related problems in the elderly, the role of the pharmacist as a member of the interdisciplinary senior healthcare team, and employment opportunities in senior care pharmacy. Graded P/N.

Recommended: First-year standing PharmD program and PHAR 723 and PHAR 735 and PHAR 739

PHAR 718. NATURAL PRODUCT DRUG DEVELOPMENT. (2 Credits)

Overview of the process of drug development, with an emphasis on natural product sources of lead components. Top-selling and mainstay drugs will be researched in literature assignments and discussed to illustrate historical and current drug development paradigms. In addition, future approaches to drug discovery and paradigm shifts to incorporate concepts such as network pharmacology will be explored.

Recommended: Second-year standing in PharmD program

PHAR 719. POISONS AND TOXINS. (2 Credits)

Covers many different types of substances, including common household poisons, poisonous plants and mushrooms, toxic gases/metals, shellfish toxins, and other natural toxins. Aspects of the chemistry and pharmacology of the poisons, antidotes/treatments, and occasional case studies will be covered. Historical examples and current events will also be incorporated into the course materials.

Recommended: PHAR 735

PHAR 720. PHARMACY PRACTICE I-PRINCIPLES OF INTEGRATED PATIENT CARE. (4 Credits)

Pathophysiology of common conditions, self-care therapeutics, clinical data collection and documentation, prescription drug information and education, patient counseling skills, basic pharmacy calculations.

Recommended: First-year standing in PharmD program

PHAR 721. PHARMACY PRACTICE II. (3 Credits)

Interviewing skills; patient drug, education; nonprescription drugs.

Recommended: PHAR 720. Concurrent enrollment in PHAR 724 and PHAR 730

PHAR 722. PHARMACY PRACTICE III: PRINCIPLES OF INTEGRATED PATIENT CARE. (4 Credits)

Pharmacy Practice III continues the progression of topics introduced in Pharmacy Practice I and II. Patient interview and assessment techniques, communication skills, nonprescription products, and compounding techniques are emphasized in the lab. Lec/lab.

PHAR 726. PRINCIPLES OF EVIDENCE-BASED MEDICINE II: DRUG LIT EVAL. (3 Credits)

Students will learn to critique and evaluate health-related scientific journal articles using valid established techniques.

Recommended: Second-year standing in PharmD program

PHAR 728. PHARMACY LAW. (2 Credits)

Introduces the student to the federal and state agencies and regulations that govern pharmacy practice and provides students with foundational knowledge and skills to comply with state and federal regulations. Emphasis will be on regulations from the Food and Drug Administration, Drug Enforcement Administration, and Oregon Board of Pharmacy.

PHAR 729. PRINCIPLES OF EVIDENCE-BASED MEDICINE I: INFORMATION SCIENCE. (3 Credits)

Students will learn to identify appropriate information resources and will systematically collect, arrange, and analyze pertinent information related to a particular patient or drug product problem.

Recommended: First-year standing in PharmD program

PHAR 733. PHARMACEUTICS I. (3 Credits)

Students develop an in-depth understanding of drug dosage formulation concepts to optimize drug therapy. Approved for use on a graduate program of study.

Recommended: BB 490 and PHAR 735 and first-year standing in PharmD program

PHAR 734. PHARMACEUTICS II. (3 Credits)

Preformulation and formulation factors affecting the development, production and use of pharmaceutical dosage forms, including ingredients in, and physical, chemical, and biological properties affecting storage, stability, and handling of dosage forms. Lec/lab. Approved for use on a graduate program of study.

Recommended: PHAR 733 and PHAR 735

PHAR 735. FOUNDATIONS OF DRUG ACTION I. (3 Credits)

Introductory course into actions of chemicals on physiological systems. Concepts encompass drug absorption and distribution, drug design and characterization of drug interactions with specialized cellular components, drug activation of biological response via biochemical or molecular transduction mechanisms, drug-induced toxicities and drug biotransformation or excretion. Approved for use on a graduate program of study.

Recommended: First-year standing in PharmD program

PHAR 736. FOUNDATIONS II: AUTONOMIC DRUG ACTIONS. (3 Credits)

Drug actions in the autonomic nervous system (ANS) provide a template for understanding drug actions throughout biological systems. Provides a complete consideration of pharmacologic and medicinal chemistry principles as they relate to drug interactions with the ANS. Treatment options for selected diseases that respond to drugs acting on the ANS are also addressed.

Recommended: PHAR 729 and PHAR 735. Concurrent enrollment in BB 491

PHAR 737. FOUNDATIONS OF DRUG ACTION II. (3 Credits)

Introductory course presenting actions of chemicals on physiological systems. Concepts encompass drug activation of biological response via biochemical or molecular transduction mechanisms, pharmacogenetics and pharmacogenomics, and drug-induced toxicities. Approved for graduate credit.

Recommended: PHAR 735

PHAR 738. HEALTHCARE SYSTEMS I. (3 Credits)

Examination of the U.S. healthcare industry and how it relates to pharmacy. Emphasis is given to changing relationships between healthcare systems, patients, providers of care, hospitals, insurers, employers and the government.

Recommended: PHAR 707 and PHAR 729

PHAR 739. HEALTHCARE SYSTEMS II. (2 Credits)

Examination of the U.S. healthcare industry and the public healthcare system, as they relate to pharmacy. Emphasis is given to changing relationships between healthcare systems, patients, providers of care, hospitals, insurers, employers and the government.

Recommended: PHAR 728 and PHAR 738

PHAR 740. PHARMACY PRACTICE IV. (3 Credits)

Basic physical assessment skills and identification of therapeutic endpoints and monitoring parameters for drugs presented in the medicinal chemistry/pharmacology sequence. Students will gain experience in basic physical assessment skills, interviewing skills, history taking, organizing pharmacy notes, and documenting information. Lec/lab.

Recommended: PHAR 722 and PHAR 725 and PHAR 729 and PHAR 734 and PHAR 735. Concurrent enrollment in PHAR 743 and PHAR 752

PHAR 741. PHARMACY PRACTICE V. (3 Credits)

Basic physical assessment skills and identification of therapeutic endpoints and monitoring parameters for drugs presented in the medicinal chemistry/pharmacology sequence. Students will gain experience in basic physical assessment skills, interviewing skills, history taking, organizing pharmacy notes, and documenting information. Lec/lab.

Recommended: PHAR 740. Concurrent enrollment in PHAR 744 and PHAR 753

PHAR 742. PHARMACY PRACTICE VI. (3 Credits)

Basic physical assessment skills and identification of therapeutic endpoints and monitoring parameters for drugs presented in the medicinal chemistry/pharmacology sequence. Students will gain experience in basic physical assessment skills, interviewing skills, history taking, organizing pharmacy notes, and documenting information. Lec/lab.

Recommended: PHAR 741. Concurrent enrollment in PHAR 745 and PHAR 754

PHAR 743. INTRODUCTORY PRACTICE EXPERIENCES: COMMUNITY CARE II. (2 Credits)

Students are assigned to community, institutional and ambulatory care pharmacy settings, and experiences emphasize topics and communication methods covered in the corresponding pharmacy practice course. Graded P/N.

Corequisites: PHAR 740, PHAR 752

PHAR 744. INTRODUCTORY PRACTICE EXPERIENCES: AMBULATORY CARE I. (2 Credits)

Students are assigned to institutional or ambulatory care pharmacy settings, and experiences emphasize topics and communication methods covered in the corresponding pharmacy practice course. Graded P/N.

Recommended: Concurrent enrollment in PHAR 741 and PHAR 753

PHAR 745. INTRODUCTORY PRACTICE EXPERIENCES: AMBULATORY CARE II. (2 Credits)

Students are assigned to institutional or ambulatory care pharmacy settings, and experiences emphasize topics and communication methods covered in the corresponding pharmacy practice course. Graded P/N.

Recommended: Concurrent enrollment in PHAR 742 and PHAR 754

PHAR 746. PHARMACY MANAGEMENT. (3 Credits)

Concepts, principles and fundamentals of pharmacy financial and personnel management. Approved for use on a graduate program of study.

PHAR 747. INFECTIOUS DISEASES AND THEIR TREATMENTS. (3 Credits)

Introduction to infectious disease processes and antimicrobial agents, including general clinical microbiology, and structure and mechanism of action of anti-bacterials, anti-virals, anti-fungals, and anti-parasitic agents.

Recommended: Upper-level biochemistry

PHAR 748. DRUG ACTIONS IN IMMUNOLOGY AND INFLAMMATION. (3 Credits)

Review of foundational concepts in immunology, inflammation and tissue repair; and modification of these processes therapeutically through an understanding and application of anti-inflammatory agents and immune system modulators.

PHAR 750. PHARMACOKINETICS/BIOPHARMACEUTICS. (4 Credits)

Pharmacokinetics and bioavailability of drugs in clinical care, including changing disease states. Approved for use on a graduate program of study.

Recommended: PHAR 734 and PHAR 735. Concurrent enrollment in PHAR 752

PHAR 752. INTEGRATED DRUG STRUCTURE, ACTION, AND THERAPEUTICS I. (7 Credits)

Drug therapy of central nervous system disorders; molecular, cellular and physiologic basis of drug action; chemical and physical properties affecting drug metabolism, action and toxicities; treatment options; patient and disease-specific therapeutic considerations. Approved for use on a graduate program of study.

Recommended: Second-year standing in the PharmD program

PHAR 753. INTEGRATED DRUG STRUCTURE, ACTION AND THERAPEUTICS II. (7 Credits)

Pulmonary, renal, gastrointestinal, and cardiovascular disorders. Drug therapy of pulmonary and cardiovascular disorders; molecular, cellular and physiologic basis of drug action; chemical and physical properties affecting drug metabolism, action and toxicities; treatment options; patient and disease-specific therapeutic considerations. Approved for use on a graduate program of study.

Recommended: PHAR 752 and second-year standing in the PharmD program

PHAR 754. INTEGRATED DRUG STRUCTURE, ACTION AND THERAPEUTICS III. (7 Credits)

Drug therapy of endocrine disorders, and men's and women's health issues; molecular, cellular and physiologic basis of drug action; chemical and physical properties affecting drug metabolism, action and toxicities; treatment options; patient and disease-specific therapeutic considerations. Approved for use on a graduate program of study.

Recommended: PHAR 753 and second-year standing in the PharmD program

PHAR 760. INTRODUCTORY PHARMACY PRACTICE EXPERIENCES: HEALTH SYSTEMS. (2 Credits)

Supervised introductory professional education in a variety of pharmacy service settings within a health system. Emphasis will be on gaining familiarity with the provision patient centered care through a variety of pharmacy services (e.g., inpatient pharmacy, transitions of care, acute care clinical services) which will expose students to the issues and disease states affecting the acute patient population, the types of health care providers, and relevant policies and procedures. Graded P/N.

This course is repeatable for 6 credits.

PHAR 761. ADVANCED INTEGRATED DRUG THERAPY I. (8 Credits)

Pathophysiologic basis of disease and drug therapy management.

Recommended: Third-year standing in the PharmD program. Concurrent enrollment in PHAR 764 and PHAR 770

PHAR 762. ADVANCED INTEGRATED DRUG THERAPY II. (8 Credits)

Pathophysiologic basis of disease and drug therapy management.

Recommended: Third-year standing in the PharmD program. Concurrent enrollment in PHAR 764 and PHAR 770

PHAR 763. PATHOPHYSIOLOGY AND THERAPEUTICS III. (7 Credits)

Pathophysiologic basis of disease and drug therapy management.

Recommended: PHAR 762. Concurrent enrollment in PHAR 766 and PHAR 774

PHAR 764. PHARMACY PRACTICE VII. (3 Credits)

Development of skills for advanced drug therapy problem identification, assessment, and plan resolution for patients with diseases discussed in PHAR 761, PHAR 762, PHAR 763. Students will integrate interviewing, physical assessment, and problem-solving to identify, assess, and resolve drug therapy problems, and communicate findings in SOAP notes, care plans, and case presentations.

Recommended: PHAR 740 and PHAR 741 and PHAR 742 and third-year standing in the PharmD program. Concurrent enrollment in PHAR 760 and PHAR 761 and PHAR 770

PHAR 765. PHARMACY PRACTICE VIII. (3 Credits)

Development of skills for advanced drug therapy problem identification, assessment, and plan resolution for patients with diseases discussed in PHAR 761, PHAR 762, PHAR 763. Students will integrate interviewing, physical assessment, and problem-solving to identify, assess, and resolve drug therapy problems, and communicate findings in SOAP notes, care plans, and case presentations.

Recommended: PHAR 761 and PHAR 764. Concurrent enrollment in PHAR 760 and PHAR 762 and PHAR 771

PHAR 766. PHARMACY PRACTICE IX. (3 Credits)

Development of skills for advanced drug therapy problem identification, assessment, and plan resolution for patients with diseases discussed in PHAR 761, PHAR 762, PHAR 763. Students will integrate interviewing, physical assessment, and problem-solving to identify, assess, and resolve drug therapy problems, and communicate findings in SOAP notes, care plans, and case presentations. Lec/lab/rec.

Recommended: PHAR 762 and PHAR 765. Concurrent enrollment in PHAR 760 and PHAR 763 and PHAR 772

PHAR 767. PRE-APPE READINESS AND COMPLEX CASE ANALYSIS. (3 Credits)

Confidence and competence needed for advanced practice settings are enhanced utilizing a mixture of benchmark assessment tools and small case discussions of complex patient cases. The focus is to assure readiness to integrate into inter-professional collaborative health care settings and serve diverse patient populations. Knowledge, skills, attitudes, and professional values are assessed and developed. Formative and summative feedback delivered through faculty, peer and self-evaluation help guide student preparation for advanced experiences and life-long learning. Graded P/N.

Recommended: PHAR 760 and PHAR 762 and PHAR 765 and PHAR 773

PHAR 768. APPLIED LAW AND ETHICS. (1 Credit)

Student understanding of pharmacy law is assessed, and discussed in the context of pharmacists' ability to properly respond when legal concepts may not align with ethical decision making in a health profession. Students will apply a framework for ethical decision-making and identify personal strategies to maintain currency in pharmacy law and applied ethical decision making.

Recommended: PHAR 760 and PHAR 762 and PHAR 765 and PHAR 773

PHAR 770. ADVANCED PHARMACOKINETICS. (4 Credits)

A physiologic approach to understanding advanced pharmacokinetic principles. Approved for use on a graduate program of study.

Recommended: PHAR 750 and PHAR 751 and third-year standing in the PharmD program

PHAR 773. EVIDENCE BASED MEDICINE III. (3 Credits)

Covers the principles required for evidence-based medicine, including interpreting and applying results from clinical, humanistic, and economic research to medical decision-making. Approved for use on a graduate program of study.

Recommended: PHAR 726 and PHAR 729 and third-year standing in the PharmD curriculum.

PHAR 774. PRINCIPLES OF EVIDENCE-BASED MEDICINE IV: DRUG POLICY. (3 Credits)

This three-credit course will cover a variety of topics related to drug policy and drug use management. Population-based strategies to improve drug use will be emphasized along with developing an evidence-based process for evaluating new drugs. A major course project, evaluating a new drug, will focus on application of principles taught in this and previous courses.

Recommended: PHAR 773

PHAR 776. PHARMA-CSI. (2 Credits)

Application of PK, PD, and P'genomic concepts, principles, and equations in computer workshops to solve drug therapy misadventures. Approved for use on a graduate program of study.

Recommended: PHAR 770 and third-year standing in the PharmD program

PHAR 777. ACUTE MEDICAL EMERGENCIES. (2 Credits)

Drug therapy management in the critically ill patient. Graded P/N.

Recommended: PHAR 762

PHAR 778. ADVANCED ADULT MEDICINE. (2 Credits)

Adult medicine elective utilizes actual patient cases to enhance knowledge of pharmacy and the pharmacologic basis of therapeutics in the setting of adult medicine, emphasizing application or current guidelines and major clinical trials for commonly encountered disease states. Graded P/N.

Recommended: Third-year standing in PharmD program and PHAR 761 and PHAR 762 and PHAR 764 and PHAR 765

PHAR 780. COMMUNITY PHARMACY CLERKSHIP. (8 Credits)

Supervised advanced professional education in ambulatory care pharmacy practice environment. Emphasis is placed on the application of direct and indirect pharmaceutical patient care and direct interactions with other health care professionals. Students will evaluate, assess and monitor pharmacotherapy of acute and chronic diseases in addition to providing drug information. Graded P/N.

This course is repeatable for 32 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774

PHAR 785. AMBULATORY PRIMARY CARE CLERKSHIP. (8 Credits)

Supervised advanced professional education in ambulatory care pharmacy practice environment. Emphasis is placed on the application of direct and indirect pharmaceutical patient care and direct interactions with other health care professionals. Students will evaluate, assess and monitor pharmacotherapy of acute and chronic diseases in addition to providing drug information to patients and health care professionals. Graded P/N.

This course is repeatable for 32 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774

PHAR 790. GENERAL INTERNAL MEDICINE CLERKSHIP. (8 Credits)

Supervised advanced professional education located in internal medicine inpatient pharmacy practice environment. Emphasis is placed on the application of biomedical and pharmaceutical sciences to direct and indirect pharmaceutical patient care and direct interactions with other health care professionals. Students will evaluate, assess, and monitor pharmacotherapy involved in a wide variety of acute and chronic diseases. In addition, students will provide drug information to other health care professionals and patients. Graded P/N.

This course is repeatable for 32 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774

PHAR 792. HOSPITAL/HEALTH SYSTEMS PATIENT CARE CLERKSHIP. (8 Credits)

Supervised advanced professional education located in various hospital or health care systems patient care-oriented settings. Emphasis is placed on application of pharmaceutical sciences and pharmacotherapy to patient care. Graded P/N.

This course is repeatable for 24 credits.

Recommended: Fourth-year standing in the PharmD program

PHAR 795. PATIENT CARE ELECTIVE CLERKSHIP. (8 Credits)

Supervised advanced professional education located in various patient care-oriented settings. Emphasis is placed on the application of pharmaceutical sciences and pharmacotherapy to direct and indirect pharmaceutical care. Specialties include but are not limited to geriatrics, pediatrics, infectious disease, oncology, general patient care, nutrition support, nuclear pharmacy, home infusion, critical care, anticoagulation, pain management, etc. Graded P/N.

This course is repeatable for 24 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774

PHAR 797. ELECTIVE CLERKSHIP. (8 Credits)

Supervised advanced professional education located in various pharmacy-oriented settings. Emphasis is placed on the application of pharmaceutical sciences and pharmacotherapy to a variety of environments involving pharmacy. Specialties include but are not limited to managed care, drug information, administration, pharmaceutical research, pharmaceutical industry, professional pharmacy organizations, etc. Graded P/N.

This course is repeatable for 24 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774

PHAR 798. PHARMACY HEALTH ADMINISTRATION. (8 Credits)

Provides students the opportunity to integrate and apply leadership and business principles necessary to operate and manage a pharmacy business or department in a diverse organizational environment.

This course is repeatable for 16 credits.

Recommended: PHAR 760 and PHAR 763 and PHAR 766 and PHAR 772 and PHAR 774 and reading and understanding of the Advanced Experiential Manual

PHAR 799. SELECTED TOPICS. (1-16 Credits)

This course is repeatable for 16 credits.