Doctor of Pharmacy (Pharm. D.)

Academic and Technical Standards

In accordance with section 504 of the Rehabilitative Act of 1973 (PL 93-112), and incorporating the guidelines of the Americans with Disabilities Act (ADA PL 101-336) enacted by Congress in 1990, the West Virginia University School of Pharmacy has adopted minimal technical standards for the assessment of admission, scholastic advancement, and graduation for its professional degree (doctor of pharmacy) program.

Because the doctor of pharmacy (Pharm.D.) degree signifies that the holder is a pharmacist prepared for entry into the practice of pharmacy, it follows that graduates must have the knowledge, skills, and demeanor to function in a broad variety of clinical situations and to conduct a wide spectrum of pharmaceutical care activities.

Candidates for admission into, progression through, and graduation from the Pharm.D. program must have the functional use of the senses of vision and hearing. Candidates’ pharmaceutical skills will also be lessened without the functional use of the senses of equilibrium, smell, and taste. Additionally, they must have sufficient motor function to permit them to carry out the activities described in the sections that follow. They must be able to consistently, quickly, and accurately integrate all information received by whatever sense(s) employed, and they must have the intellectual ability to learn, integrate, analyze, and synthesize data.

A candidate for the Pharm.D. degree must have abilities and skills of five varieties including:

- Observation
- Communication
- Motor
- Conceptual, integrative, and quantitative
- Behavioral and social

Technological compensation can be made for some handicaps in certain of these areas, but a candidate should be able to perform in a reasonably independent manner. The use of a trained intermediary means that a candidate’s judgment must be mediated by someone else’s power of selection and observation. For details, see the Technical Standards document published online at http://pharmacy.hsc.wvu.edu/studentservices/Description-of-the-Professional-Program.

Student Course Load

Students in the doctor of pharmacy program are expected to register for all required classes in a semester unless directed not to do so by the Committee on Academic and Professional Standards or the Office of Student Services. Full-time students in the School of Pharmacy may not register for less than nine credit hours during any semester without written approval of the Committee on Academic and Professional Standards or the Office of Student Services. For an exception, a letter of petition must be submitted to the Committee on Academic and Professional Standards through the School of Pharmacy’s Office of Student Services.

Promotion and Graduation Requirements

EVALUATION OF STUDENT PROGRESS

Promotion of a student in the doctor of pharmacy program is evaluated in two major areas: successful completion of all required work and appropriate adherence to the professional standards of the School of Pharmacy.

The following information is only a brief outline of the School of Pharmacy policies and procedures. Detailed requirements and policies for evaluation of student progress and graduation can be found in the Policy on Academic and Professional Standards Governing the Doctor of Pharmacy Degree Program at West Virginia University School of Pharmacy and may be viewed on the School of Pharmacy website. Copies are available at the Office of Student Services. The Committee on Academic and Professional Standards administers all promotion and academic penalty rules.

ACADEMIC COURSEWORK REVIEW

The Committee on Academic and Professional Standards of the School of Pharmacy reviews the performance of each student in every course at the end of each academic period and makes recommendations to the dean.

If a student has been found to have a marginal performance in any course as indicated by a grade less than a C or a semester GPA less than 2.5, probation will be recommended. Students on probation are not eligible to hold office in student organizations. Students on probation are expected to be present for all of their classes and laboratories. If a student fails to complete any required remedial actions or meet the specified performance requirements during the probationary period, academic suspension or dismissal may be recommended.

If a student has been found to have an unsatisfactory performance as indicated by a grade of F in any course, two or more grades less than a C in a semester, three or more grades less than C in a year, or an accumulation of narrative evaluations that indicate an academic deficiency or inadequate
integration of curricular content, suspension or dismissal from the school may be recommended. In selected circumstances, the committee may recommend remedial work or repetition of all or a portion of the curriculum. Exceptions may be made only on recommendation of the committee.

After academic dismissal, a student may apply for readmission to the School of Pharmacy. Readmission of a student is the prerogative of the dean following a recommendation by the Committee on Academic and Professional Standards.

**GRADING POLICY**

Courses in the doctor of pharmacy degree program are graded either as A (excellent), B (good), C (fair), D (marginal), F (failing), I (incomplete), or on a (P) pass/(F) fail basis. Grades may be accompanied by a narrative report on the student’s progress, noting any factors requiring remedial work or counseling. It is customary that all experiential courses are accompanied by a narrative evaluation. Narrative evaluations are kept in the student’s file in the Office of Student Services.

The grade of incomplete (I) is given when the instructor believes that the work is unavoidably incomplete. If the grade of I is not removed by the satisfactory completion of the work before the end of the next semester in which the student is in residence, it becomes a failure (F) unless special permission to postpone the work is obtained from the Committee on Academic and Professional Standards. It is the responsibility of the student to consult the instructor about the means and schedule for completing incomplete courses. A contract specifying what work must be completed and when should be drawn up by the instructor and signed by the instructor and student.

**PROFESSIONAL STANDARDS REVIEW**

In view of public and professional responsibilities, the faculty of each of the professional schools of WVU has the authority to recommend to the president of the University the removal of any student from its rolls whenever, by formal decision reduced to writing, the faculty finds that the student is unfit to meet the qualifications and responsibilities of the profession. Further information is provided in The Policy on Academic and Professional Standards Governing the Doctor of Pharmacy Degree at West Virginia University School of Pharmacy, which is available at the School of Pharmacy Office of Student Services.

**Requirements for Degree**

The awarding of a doctor of pharmacy degree to a student is approved by the dean of the School of Pharmacy after receipt of recommendations from the Academic and Professional Standards Committee. Candidates must meet the following criteria:

1. Meet the academic and professional standards, criteria, and requirements outlined in The Policy on Academic and Professional Standards Governing the Doctor of Pharmacy Degree at West Virginia University School of Pharmacy, which is available at the School of Pharmacy Office of Student Services and on the school’s website
2. Satisfactorily complete all of the required coursework in a timely fashion, which normally will not exceed five years from the date of initial enrollment into the professional program
3. Pay all fees
4. Complete the last year’s work in residence in this school
5. Be present at the commencement exercises unless excused by the dean of the School of Pharmacy in writing
6. Satisfactorily complete the required number of experiential rotations and demonstrate the attainment of minimum competencies
7. Complete 100 hours of volunteer community service.

**Special Requirements**

The Board of Pharmacy requires 1,500 clock hours of internship experience for licensure in West Virginia. Students are required to obtain an Intern Certificate from the West Virginia Board of Pharmacy in order to accrue intern hours. Any hours worked before becoming a registered intern will not apply toward meeting the WV board requirements. Students must have a valid Intern Certificate throughout their entire experiential years of the Pharm.D. program. The certificate must be maintained until completion of the entire internship. The Board of Pharmacy holds final authority over internship rules and regulations. Up to 800 hours of the total of 1,500 required by the WV Board of Pharmacy may be obtained via the WVU School of Pharmacy experiential program.

Students in the Pharm.D. program will perform one two-week block of experiential rotations at the conclusion of both the first and second years of the professional curriculum and eight five-week rotations during the Advanced Pharmacy Practice Experience (APPE) year of the program. Two of the eight blocks performed in the fourth year of the curriculum must be performed in designated rural sites. Site placement and sequencing will occur in the semesters prior to the experiential activities. Students may incur additional housing and/or travel costs when taking part in the experiential rotations. Opportunity will be provided for students to prioritize their site selection; however, ultimate authority for site selection will be maintained by the School of Pharmacy. All didactic coursework (required and elective) must be successfully completed prior to beginning the fourth-year APPE experiential rotations.

**Legal Requirements and Reciprocity**

To qualify for examination for licensure by the West Virginia Board of Pharmacy, the applicant must be 18 years of age or older and of good moral character. Further, the applicant must be a graduate of an accredited school of pharmacy and must meet the internship requirements set by the West Virginia Board of Pharmacy.
Interns must be registered with the West Virginia Board of Pharmacy and must be enrolled in or a graduate of an accredited school of pharmacy to gain experience acceptable for the internship requirement. Details may be obtained from the Office of Student Services. School of Pharmacy graduates are eligible for examination to practice pharmacy in any state. Graduates who successfully pass the West Virginia Board of Pharmacy examination are privileged to reciprocate with forty-nine other states, the District of Columbia, and Puerto Rico provided they meet the licensure requirements of these states.

Course Changes
A student who seeks exemption from one or more professional courses based upon previous academic experience must submit a written petition to the Committee on Academic and Professional Standards. Only courses taken through an accredited school of pharmacy or medicine will be considered for possible substitution.

Pharm.D. Admissions
Admissions are competitive. It should be noted that applicants with overall or prerequisite GPAs below 3.0 are not admitted. Criteria used to evaluate candidates include academic performance, as measured by the grade point averages (GPA) for all the above-noted prerequisite courses and the cumulative GPA achieved in all prior college-level coursework, Pharmacy College Admissions Test (PCAT) scores (including a written essay), a personal interview, and letters of recommendation. All prerequisite courses must be taken at a U.S. or Canadian accredited institution of higher education and completed with a grade of C or better. Coursework completed outside the U.S. or Canada will not be considered for admission. Priority is given to qualified West Virginia residents, applicants who have performed the majority of their prerequisite coursework in a West Virginia college or university, and applicants who have already earned a bachelor's degree. Careful consideration is given to those personal qualifications which bear upon the fitness of applicants for the study and practice of the profession of pharmacy.

All applicants must first file an initial electronic application with the Pharmacy College Application Service (PharmCAS). Instructions for completing the application are found on the PharmCAS website: http://www.pharmcas.org/ . Application deadlines are subject to change; check PharmCAS, the School of Pharmacy website at http://pharmacy.hsc.wvu.edu, or contact the School to verify current deadlines. Supplemental applications specific to the WVU School of Pharmacy will then be sent to selected candidates deemed qualified by the Committee on Admissions. A $50 application fee must accompany the supplemental application.

Each applicant who is recommended for acceptance is required to pay a deposit of $400 (if WV resident) or $800 (if non-WV resident) before his or her name is added to the official list of those accepted by the School of Pharmacy. If the applicant enrolls, this sum is applied to the first-semester tuition. If the applicant fails to enroll, this deposit is forfeited.

With enrollment in the School of Pharmacy, all students must comply with the immunization and diagnostic procedures required by the WVU Board of Governors, WVU, the WVU Robert C. Byrd Health Sciences Center, and the School of Pharmacy.

Complete information may be obtained from:

School of Pharmacy Office of Student Services
WVU Robert C. Byrd Health Sciences Center
P.O. Box 9500
Morgantown, WV 26506-9500

or from:
Office of Admissions
WVU Robert C. Byrd Health Sciences Center
P.O. Box 9815 Morgantown, WV 26506-9815

Pharmacy College Admission Test
Completion of the Pharmacy College Admission Test is a requirement for admission to the School. It is recommended that the student take this test in the summer or fall before making application for admission. Information concerning time and place of the test can be obtained from a pre-pharmacy advisor, the School of Pharmacy, or by writing:
Personal Interview

The Committee on Admissions requires a personal interview with selected candidates who qualify for a supplemental application. The Committee on Admissions will determine which applicants are to receive the supplemental application. Interviews are held during the spring semester at the WVU Robert C. Byrd Health Sciences Center in Morgantown.

Recommendations on Academic Performance

Two academic recommendations are required and must be provided by course instructors in any two of the pre-pharmacy science areas: biology, chemistry, math, and physics. The third recommendation may be provided by a variety of individuals. Please refer to the PharmCAS website for more detailed information.

Early Decision

The Early Decision program is a binding option for applicants who have decided that West Virginia University is the degree program of their first choice and that they will enroll if accepted. As an Early Decision applicant, you can apply to only one pharmacy degree program.

The Early Decision application deadline is typically the first of September. In addition to completing the PharmCAS application, you must arrange for PharmCAS to receive all of your official transcripts and fee by the September deadline. If your application, transcripts, or fee arrives after the deadline, PharmCAS will automatically change your file from early decision status to regular status.

You may be offered early admission, denied admission, or deferred to regular applicant status. If you are offered admission as an Early Decision applicant, you are obligated to accept the offer and you will not be permitted to apply to other PharmCAS institutions. If, however, you are denied admission as an Early Decision applicant, you may apply to other PharmCAS institutions for an additional fee. Refer to the PharmCAS application fee schedule to determine the cost to apply to each additional program. PharmCAS institutions will make admission decisions on early decision applicants by mid October.

Admission to Advanced Standing for Transfer Students

If space is available, students from other accredited schools of pharmacy may be admitted, provided they meet the prerequisite course requirements of the WVU School of Pharmacy, have at least a 2.5 professional grade point average, are in good academic and professional standing at the school of origin, and are eligible for continuation toward a degree in pharmacy at the school initially attended. Grades of D in professional courses cannot be transferred.

Pharm.D.

- Optional pathway programs in the Pharm.D. curriculum
- Curriculum requirements for students beginning the program Fall 2014
- Program of study for students beginning the Pharm.D. program Fall 2014

Optional Pathway Programs

AREA OF EMPHASIS IN CLINICAL PHARMACY PRACTICE

Students can complete an Area of Emphasis in Clinical Pharmacy Practice which provides students with the knowledge, clinical skills, and professional development necessary to prepare for post graduate year 1 (PGY-1) residency training. As part of the pathway, students complete a research project under the mentorship of a faculty member. Students apply to the program in the second year of the professional program through a competitive application process. More information can be found on the School’s webpage at http://pharmacy.hsc.wvu.edu/studentservices/Description-of-the-Professional-Program/Areas-of-Emphasis/Emphasis-in-Clinical-Pharmacy-Practice.

AREA OF EMPHASIS IN RESEARCH

The Area of Emphasis in Research is designed to expose students to the research process through research-related coursework and completion of a research project relevant to pharmacy under the guidance of a faculty member. This pathway can increase competitiveness for residencies, provide research experience for students who are considering academic careers, or provide research exposure for students considering additional graduate training. Students complete a honors thesis style write up demonstrate critical thinking skills and contribute new knowledge to the profession of

JOINT PHARM.D./MASTER OF BUSINESS ADMINISTRATION (M.B.A.)

The joint Pharm.D./Master of Business Administration (M.B.A.) program provides outstanding career opportunities for graduates by building expertise in business administration principles and managerial practices coupled with therapeutic knowledge and expertise in medication management. The goal of the dual degree program is to prepare the next generation of leaders, managers, and administrators for rewarding careers in health care or pharmaceutical organizations. Opportunities for the joint degree graduates include leadership positions in hospitals and health systems, pharmacy benefit management companies, government organizations, the pharmaceutical industry, chain pharmacy corporations, and owning, franchising, or operating an independent pharmacy. Through a well-coordinated plan of study in both degree programs, the dual Pharm.D./M.B.A. degree students will be able to obtain two nationally-accredited graduate degrees - M.B.A. and Pharm.D. degrees - during the course of the 4-year Pharm.D. program. Additional information, including the plan of study, can be found at http://pharmacy.hsc.wvu.edu/studentservices/Description-of-the-Professional-Program/PharmD-MBA-Program.

GRADUATE CERTIFICATE IN GERONTOLOGY

The Graduate Certificate in Gerontology is offered to students through the School of Social Work. Students explore the biologic, psychological, and sociological processes of aging, the needs and experiences of older people, and the impact of social policies related to aging. An understanding of the unique problems and needs of older adults in Appalachia is emphasized. Coursework in the School of Pharmacy related to the optimal use of medications in the elderly complements the core curriculum. Additional information can be found at http://socialwork.wvu.edu/certificate-programs/graduate-certificate-in-gerontology.

CURRICULUM REQUIREMENTS

Program Course List:

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### SUGGESTED PLAN OF STUDY

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#### Fourth Year

**Spring**

- Advanced Experiential Components (Students rotate through one-month experiences)
Community Practice (one rotation)
Institutional Practice (one rotation)
Acute Care (one or two rotations)
Ambulatory Care (one or two rotations)
Electives (three rotations)
Total advanced experiential (eight rotations)°°

Total credit hours: 106-112

* Prior to beginning the experiential rotations, each student enrolled in the School of Pharmacy professional program must complete a minimum of ten credit hours of school of pharmacy elective courses or from a list of approved professionally-related electives as part of the pharmacy curriculum. Electives must be completed during the first three years of the four-year professional program. Beyond the required ten credit hours, the student may take any other electives. No course taken prior to admission into the School of Pharmacy may be used nor repeated to meet the elective requirements of the professional curriculum, and no reduction in elective requirements will be allowed for courses completed or degrees earned prior to enrollment in the program.

** Fourth-year students will be required to complete two rotations in the summer session, three in the fall semester, and three in the spring semester.

The University P/F policies will be followed. Only selected professionally-related courses or additional free electives (in excess of the ten hours of required electives) may be taken on a pass/fail basis. No more than three credit hours of PHAR 749 Pharmaceutical Investigations will be permitted to count toward fulfillment of the pharmacy elective requirements.

COURSES

PHAR 691A-Z. Advanced Topics. 1-6 Hours.
PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

PHAR 693A-Z. Special Topics. 1-6 Hours.
A study of contemporary topics selected from recent developments in the field.

PHAR 694A-Z. Seminar. 1-6 Hours.
Seminars arranged for advanced graduate students. Grading may be S/U.

PHAR 696. Graduate Seminar. 1 Hour.
PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of his or her program.

PHAR 697. Research. 1-15 Hours.
PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.).

PHAR 700. Pharmacy as a Profession. 1 Hour.
PR: First professional year standing or consent. Introduces students to the concept of professionalism, the scope of pharmacy practice opportunities, the health care system as it relates to pharmacy, and other contemporary issues in pharmacy practice. (Grading will be S/U.).

PHAR 701. Pharmaceutical Care Lab 1. 2 Hours.
PR: First professional year standing or consent. Students will develop skills in medical terminology, communications, information retrieval, dispensing, compounding, calculations, pharmaceutical care, and problem-solving skills.

PHAR 702. Pharmaceutics 1. 3 Hours.
PR: First professional year standing or consent. Introduces drug physical-chemical characteristics relevant to the design and performance of delivery systems. Pharmaceutical dosage forms taught include disperse and polydisperse systems (suspensions, emulsions, creams, ointments, aerosols and transdermals).

PHAR 703. Pharmacy Practice Experience 1. 1 Hour.
PR: First professional year standing or consent. Provides an overview of the roles and responsibilities of community pharmacists and provides experiential learning in a community pharmacy setting. First course in a six-semester sequence that introduces students to various pharmacy practice settings.
PHAR 704. Introduction to Research. 1 Hour.
Provides pharmacy students with a forum for the discussion of a wide variety of research activities and careers. Also provides an appreciation for the science on which the pharmacy profession is based and continually evolves.

PHAR 708. Pharmaceutics 2. 3 Hours.
PR: PHAR 702. Continuation of PHAR 702. Solids dosage forms (tablets, capsules, sustained-release), regulatory pathways for marketing drugs, and biopharmaceutical principles (dosage form behavior in body).

PHAR 709. Immunology/Biotechnology. 2 Hours.
PR: First year professional standing or consent. Students will learn basic functions of the immune system, elements of the pharmaceutical applications of biotechnology, and be introduced to the chemotherapy of infections.

PHAR 710. Pharmacy Practice Experience 2. 1 Hour.
PR: PHAR 703 or consent. Provides an overview of the roles and responsibilities of community pharmacists and provides experiential learning in a community pharmacy setting. Second course in a six-semester sequence that introduces students to various pharmacy practice settings.

PHAR 711. Chemical Properties of Drugs. 2 Hours.
PR: First year professional standing or consent. Principles of chemical stability and chemical properties as they relate to drug molecules. Topics to be covered include functional group analysis, solubility, oil/water partitioning, organic acids and bases, and drug decomposition and metabolism.

PHAR 712. Pharmaceutical Care Lab 2. 2 Hours.
PR: First professional year standing or consent. Continuation of PHAR 701.

PHAR 714. Intro Community Rotation. 4 Hours.
PR or CONC: PHAR 710. Students will gain experience preparing prescriptions, providing basic drug information to patients, and participating in disease prevention activities in a community pharmacy setting.

PHAR 715. Pharmacotherapeutics 1. 4 Hours.
PR: Second professional year standing or consent. Principles and concepts of pathophysiology and pharmacotherapeutics. An organ system approach to disease states and their therapeutic management is followed.

PHAR 716. Chemistry of Drug Action 1. 3 Hours.
PR: PHAR 711 or consent. Provides a basic understanding of relationships between the chemical structure of a drug and its biological effect. Physicochemical properties, enzymatic transformations and structure-activity relationships (SAR) of important pharmaceutical agents are discussed.

PHAR 717. Pharmacy Practice Experience 3. 1 Hour.
PR: Second professional year standing or consent. Introduces students to the principles of service learning through development of an on-site healthcare-related service project. Third course of a six-semester sequence that introduces students to various pharmacy practice settings.

PHAR 718. Pediatric Pharmacotherapy. 2 Hours.
PR: Second professional year standing or consent. Overview of common pathophysiology and pharmacotherapy principles in the pediatric population and selection of drug therapy to treat the pediatric patient.

PHAR 719. Pharmacy Practice Experience 4. 1 Hour.
PR: PHAR 717 or consent. Introduces students to the principles of service learning through implementation of an on-site healthcare related service project. Fourth course of a six-semester sequence that introduces students to various pharmacy practice settings.

PHAR 720. Patient Health Education. 2 Hours.
PR: Second professional year standing or consent. Interpersonal communication skills will be enhanced in the areas of patient-centered and colleague-centered communications. Students will learn processes for providing pharmaceutical care (e.g., interviewing and counseling patients; formulating a plan; monitoring; and documenting information).

PHAR 721. Advocacy and Leadership. 2 Hours.
PR: Second and third professional year standing or consent. The course will focus on developing the student’s leadership skills as an advocate for the profession of pharmacy.

PHAR 722. WMD and Disaster Planning. 1 Hour.
Through didactic, hands on instruction, and participation in real world disaster planning sessions and/or drills, students learn about weapons of mass destruct (WMD) surveillance and mitigation in addition to disaster planning principles.

PHAR 723. Pharmaceutical Care Lab 3. 1 Hour.
PR: Second professional year standing or consent. Continuation of PHAR 712.

PHAR 724. Pharmaceutical Care Lab 4. 2 Hours.
PR: Second professional year standing or consent. Continuation of PHAR 723.

PHAR 725. Pharmacotherapeutics 2. 4 Hours.
PR: PHAR 715 or consent. A continuation of PHAR 715.

PHAR 726. Chemistry of Drug Action 2. 2 Hours.
PR: PHAR 716 or consent. A continuation of PHAR 716.
PHAR 727. Medical Literature Evaluation. 2 Hours.
PR: Second professional year standing or consent. Emphasis is placed on the critical analysis and evaluation of the primary literature. Secondary and computerized information resources are also discussed, including other selected aspects of drug information.

PHAR 728. Pharmacy Management. 2 Hours.
PR: Second professional year standing or consent. This course provides an introductory survey of the basic principles of personnel and fiscal management as they apply to organizational planning and decision-making, organizational design and structure, leadership and control in organizations, and the issues facing pharmacy managers.

PHAR 729. Intro Institutional Rotation. 2 Hours.
PR or Conc: (PHAR 719 and PHAR 724) or consent. Gain experience in an institutional pharmacy setting.

PHAR 730. Pharmacotherapeutics 3. 4 Hours.
PR: PHAR 725 or consent. A continuation of PHAR 725.

PHAR 731. Biopharm & Pharmacokinetics. 3 Hours.
PR: Third year professional standing or consent. Fundamental principles of biopharmaceutics (physicochemical and biological processes affecting drug transit into the systemic circulation) and pharmacokinetics (kinetic and biological processes a drug undergoes upon entering the body).

PHAR 732. Non-Prescription Drugs. 3 Hours.
PR: Third year professional standing or consent. An advanced level course on the appropriate selection, and use of non-prescription drug products in the contemporary practice setting, the basis for self-medication, assessment of patient condition, and approach to patient counseling.

PHAR 733. Pharmacy Systems. 2 Hours.
PR: Third year professional standing or consent. Basic principles of financial management as they apply to the day-to-day operations in pharmacy systems present in institutional, community, long-term care facilities and other pharmacy venues.

PHAR 734. Pharmacy Law and Ethics. 3 Hours.
PR: First professional year standing or consent. The legal and ethical basis of pharmacy practice. Students learn about federal and state statutes, rules, and regulations that affect pharmacy practice. Ethics related situations that can arise during pharmacy practice will also be discussed.

PHAR 735. Pharmaceutical Care Lab 5. 1 Hour.
PR: PHAR 724. Continuation of PHAR 724.

PHAR 736. Pharmaceutical Care Lab 6. 1 Hour.
PR: Third Year Professional standing or consent. Experience in pharmaceutical compounding, patient assessment and monitoring, professional/ethical decision making, pharmacokinetic dosing of medications, and prevention of adverse drug-related events and medication errors.

PHAR 737. Disease Prevent Health Promo. 2 Hours.
PR: Third year professional standing or consent. This course exposes pharmacy students to pharmacoepidemiology and public health. Instruction focuses on pharmacists as integral to preventing and detecting disease and promoting community health. Emphasis is given to rural health care and Appalachian culture.

PHAR 738. Outcomes Asesmnt/Quality Imprv. 2 Hours.
PR: Third professional year standing or consent. Outcomes assessment and quality improvement will expose students to the development and implementation of formularies, drug use evaluations, outcomes assessment, and quality improvement. Emphasis will be placed on how these issues relate to pharmaceutical services.

PHAR 739. Therapeutic Patient Monitoring. 3 Hours.
PR: Third professional year standing or consent. Employs both didactic and experiential instruction to provide students with the knowledge and skills required to assess the health status of medicated patients with special emphasis on monitoring therapeutic endpoints.

PHAR 740. Pharmacotherapeutics 4. 4 Hours.
PR: PHAR 730 or consent. A continuation of PHAR 730.

PHAR 741. Clinical Pharmacokinetics. 3 Hours.
PR: PHAR 731 or consent. This course will review advanced concepts in pharmacokinetics and cover the basic pharmacokinetic properties of commonly used drugs and apply these principles to drug dosing, patient management, and rational therapeutic drug monitoring.

PHAR 742. Pharmacy Practice Experience 5. 1 Hour.
PR: Third professional year standing or consent. Provides experiential learning in an acute or ambulatory care pharmacy practice setting. Fifth course in a six-semester sequence that introduces students to various pharmacy practice settings.

PHAR 743. Teach to Learn: Learn to Teach. 3 Hours.
Provides pharmacy students the opportunity to learn how to teach in higher education/pharmacy and develop their teaching skills by participating in select teaching and learning activities.

PHAR 745. Critical Care Pharmacotherapy. 2 Hours.
PR: Third professional year standing or consent. Gain knowledge in multiple facets of critical care pharmacotherapy, particularly for students interested in pharmacy residency training in a clinical setting.
PHAR 746. Pharmacy Practice Experience 6. 1 Hour.
PR: PHAR 742 or consent. Provides experiential learning in an acute or ambulatory care pharmacy practice setting. Sixth course in a six-semester sequence that introduces students to various pharmacy practice settings.

PHAR 747. History Of Pharmacy. 2 Hours.
Gives the student a deeper appreciation of the background of pharmacy and its development from ancient times to present.

PHAR 748. Acute Care Case Studies. 2 Hours.
PR: Third professional year standing or consent. Gain experience developing pharmaceutical care plans in an acute care setting. Further prepares students interested in pursuing pharmacy residency training.

PHAR 749. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749A. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749B. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy or clinical pharmacy. (Grading may be P/F.).

PHAR 749C. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy or clinical pharmacy. (Grading may be P/F.).

PHAR 749D. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy or clinical pharmacy. (Grading may be P/F.).

PHAR 749E. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems, and policy, or clinical pharmacy. (Grading may be S/U.).

PHAR 749F. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749G. Pharmaceutical Investigation. 2-3 Hours.
PHAR 749G. Pharmaceutical Investigation. 2-3 Hr, PR: Consent. Original Investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749H. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749I. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749J. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749K. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749L. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749M. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).

PHAR 749N. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. (Grading may be P/F.).
PHAR 749O. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749P. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749Q. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749R. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749S. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749T. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749U. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749V. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749W. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 749X. Pharmaceutical Investigation. 2-3 Hours.
PR: Consent. Original investigation in pharmaceutics, medicinal chemistry, pharmacology, pharmaceutical systems and policy, or clinical pharmacy. 
(Grading may be P/F.).

PHAR 750. Automation and Technology. 2 Hours.
PR: Second year professional standing or consent. Provides an understanding of the newest technology that is available to a pharmacist in a retail or institutional setting. Students will learn to use PowerPoint, and gain experience making presentations and public speaking.

PHAR 751. Geriatrics. 2 Hours.
PR: Second or third year pharmacy students. A review of commonpharmacotherapeutics and social issues of importance to older adult patients.

PHAR 752. History of Drug Discovery. 2 Hours.
This course is concerned with the way in which advances in chemistry and biochemistry have influenced advances in drug discovery and therapeutics beginning with the late 18th century through today.

PHAR 753. Soc/Bhvr/Thry/Itcm Rsrch. 3 Hours.
Basic social and behavioral theories related to the health behavior change and health outcomes. Open to graduate students in pharmacy, public health, or other health care fields.

PHAR 754. Decision Analysis-Healthcare. 3 Hours.
Core skills in clinical decision analysis which builds on concepts derived from epidemiology, biostatistics, computing, economics and operations research and applies them to medical and pharmaco logical decisions.

PHAR 755. Pharmacoeconomics. 3 Hours.
This graduate-level course is intended to train graduate students in evaluating and conducting pharmaco economic research.

PHAR 756. Health Survey Research Methods. 3 Hours.
This course seeks to increase students’ understanding of survey research methods and to develop basic skills in survey development and administration.
PHAR 758. Ethical Regulatory Aspects of Clinical Research. 1 Hour.
Provides overview of ethical and regulatory aspects of clinical research. Grading will be Pass/Fail.

PHAR 759. Clinical Population Practicum. 1 Hour.
Exposes students to a population of interest in preparation for a research project. This course will help students to understand the lived experience of the population of interest and expose students to aspects of the healthcare system. Students will either work with a clinical population or community-based population to address one or more disease states. Grading will be Pass/Fail.

PHAR 760. Acute Care Rotation 1. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in the delivery of pharmaceutical care in an acute care setting.

PHAR 761. Acute Care Rotation 2. 5 Hours.
PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an acute care setting.

PHAR 762. Ambulatory Care Rotation 1. 5 Hours.
PR: Fourth year professional standing or consent. Experience in the delivery of pharmaceutical care in an ambulatory care setting.

PHAR 763. Ambulatory Care Rotation 2. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in the delivery of pharmaceutical care in an ambulatory care setting.

PHAR 764. Elective Rotation 1. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in a pharmacy practice setting, such as acute care, ambulatory, community, hospital, poison center, drug information, home health, long term care, or research.

PHAR 765. Elective Rotation 2. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in a pharmacy practice setting, such as acute care, ambulatory, community, hospital, poison center, drug information, home health, long term care, or research.

PHAR 766. Elective Rotation 3. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in a pharmacy practice setting, such as acute care, ambulatory, community, hospital, poison center, drug information, home health, long-term care, and research.

PHAR 769. Advanced Health Services Research Methods. 3 Hours.
Provides a working knowledge of health services research methods and how to apply these methods to answer typical research questions in health services research. The course will examine concepts but will have an applied focus with hands-on research using publicly available data sets or those that the students have access for their dissertations/manuscripts.

PHAR 770. Community Rotation. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in the delivery of pharmaceutical care in a community pharmacy setting.

PHAR 772. Institutional Rotation. 5 Hours.
PR: Fourth year professional standing or consent. Five-week experience in the delivery of pharmaceutical care in a health system setting.

PHAR 775. Advanced Biopharmaceutics. 3 Hours.
Concepts of biopharmaceutics and pharmacokinetics in relation to the design and evaluation of dosage forms and determination of rational dosage regimens in health and disease.

PHAR 779. Drugs: Bench to Market. 3 Hours.
PR: Graduate standing or permission of instructor. This is an introductory course that describes the process of drug discovery to the development of new forms for therapeutic use. Topics covered include drug design/discovery, pharmacokinetics and dynamics, pharmaceutics and industry pharmacy.

PHAR 780. Introduction to Molecular Modeling. 4 Hours.
PR: Graduate standing or permission of instructor. Introduction to molecular modeling describes computational methods for chemical and biological problems and is designed to enable the student to use molecular modeling methods as a research tool in their current or future research activities.

PHAR 781. Drug Metabolism. 3 Hours.
PR: Graduate standing or permission of instructor. This course presents a comprehensive review of the field of drug metabolism with an emphasis on the chemistry and enzymology of drug biotransformation, and current methods in drug metabolism research.

PHAR 783. Pharm Cell Biology Seminar. 1 Hour.
A literature review course in which each student will present and critically analyze primary literature in cell and molecular biology as pertinent to pharmaceutical and biomedical sciences.

PHAR 784. Pharmacology Journal Club. 1 Hour.
A primary literature based course that critically evaluates the latest findings and methods used in pharmacological research.

PHAR 785. Pharmacoeconomics. 3 Hours.
This course covers basic principles and research study designs used in pharmacoeconomics, as well as a review of the primary literature that details case examples of drugs withdrawn from the US drug market.
PHAR 786. Health Svcs Res/Sec Databases. 3 Hours.
PR: PHAR 785. This course presents various topics related to large databases including common study designs, advantages and limitations, and basic steps to extracting and analyzing large databases.

PHAR 787. Drug Discovery & Development. 1 Hour.
This seminar will teach students in the Pharmaceutical Sciences and related disciplines the current state-of-the-art of drug discovery, design, and development, develop student presentation skills, and convey the importance of staying current with key developments.

PHAR 788. Grad Sem-Hlth Outcomes Rsrch. 1 Hour.
(May be repeated for credit toward graduation.) Forum for graduate students to present research, discuss research issues and contemporary topics of interest, develop an understanding of research methods through discussion, while focusing on scientific presentation skills. Topics vary from semester to semester.

PHAR 789. Seminar in Nanoscience. 2 Hours.
Facilitates interdisciplinary research at the nanoscale by providing a forum for discussion and exploration of nanoscale science and engineering from a variety of perspectives including research and development of nanoscale devices and systems. Grading will be Pass/Fail.

PHAR 790. Teaching Practicum. 1-3 Hours.
PR: Consent. Supervised practice in college teaching of pharmacy. Note: This course is intended to insure that graduate assistants are adequately prepared and supervised when they are given college teaching responsibility. It will also present a mechanism for students not on assistantships to gain teaching experience. (Grading will be P/F.)

PHAR 791A-Z. Advanced Topics. 1-6 Hours.
PR: Consent. Investigation of advanced topics not covered in regularly scheduled courses.

PHAR 792A-Z. Directed Study. 1-6 Hours.
Directed study, reading, and/or research.

PHAR 793A-Z. Special Topics. 1-6 Hours.
A study of contemporary topics selected from recent developments in the field.

PHAR 794A-Z. Seminar. 1-6 Hours.
Special seminars arranged for advanced graduate students.

PHAR 795. Independent Study. 1-9 Hours.
Faculty supervised study of topics not available through regular course offerings.

PHAR 796. Graduate Seminar. 1 Hour.
PR: Consent. Each graduate student will present at least one seminar to the assembled faculty and graduate student body of his or her program.

PHAR 797. Research. 1-15 Hours.
PR: Consent. Research activities leading to thesis, problem report, research paper or equivalent scholarly project, or a dissertation. (Grading may be S/U.)

PHAR 798. Dissertation. 1-6 Hours.
PR: Consent. This is an optional course for programs that wish to provide formal supervision during the writing of student reports (698), or dissertations (798). Grading is normal.

PHAR 799. Graduate Colloquium. 1-6 Hours.
PR: Consent. For graduate students not seeking coursework credit but who wish to meet residency requirements, use the University’s facilities, and participate in its academic and cultural programs. Note: Graduate students who are not actively involved in coursework or research are entitled, through enrollment in their department’s 699/799 Graduate Colloquium to consult with graduate faculty, participate in both formal and informal academic activities sponsored by their program, and retain all of the rights and privileges of duly enrolled students. Grading is P/F; colloquium credit may not be counted against credit requirements for masters programs. Registration for one credit of 699/799 graduate colloquium satisfies the University requirement of registration in the semester in which graduation occurs.