(The pharmacy curriculum is subject to change without notice.) Electives offered by the Program in Health Care Ethics, Humanities and Law are listed under Preventive Medicine in the School of Medicine and Graduate School sections. These courses are offered on an interdisciplinary basis; students in all UCHSC schools are encouraged to participate.

**FALL SEMESTER**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>PHRD 3000</td>
<td>Intro Pharm Prac</td>
<td>2.0 cr.</td>
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<td></td>
<td>Catherine Jarvis, Pharm.D., Beverly Brunson, MPA Prerequisites - P1 status.</td>
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<td></td>
<td>This course uses large group didactic discussion, small group problem-based learning, self-learning and outside activities. The focus is to provide students the opportunity to learn basic skills needed for success in the professional pharmacy curriculum and in their academic careers.</td>
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<tr>
<td>PHRD 3100</td>
<td>Prof Skills Dev I</td>
<td>3.0 cr.</td>
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<td></td>
<td>Susan Paulsen, Pharm.D., Connie Valdez, Pharm.D. Prerequisites – PHRD 3000, P1 status.</td>
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<td></td>
<td>This course is the first in a five-semester longitudinal course sequence intended to develop a broad range of skills necessary for current and future pharmacy practice. It is designed to parallel the didactic portion of the curriculum.</td>
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<tr>
<td>PHRD 3200</td>
<td>Prof Career Dev</td>
<td>1.0 cr.</td>
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<td>Heather Ulrich, Pharm.D. Prerequisites – PHRD 3000, P1 status.</td>
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<td></td>
<td>Introduces students to selected opportunities and current issues related to professional careers in pharmacy. This course will therefore consist of a series of presentations by faculty and guest lecturers highlighting the multifaceted scope of contemporary pharmacy practice.</td>
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<tr>
<td>PHRD 3300</td>
<td>Experient Prac I</td>
<td>1.0 cr.</td>
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<tr>
<td></td>
<td>Christopher J. Turner, B. Pharm., Ph.D., Catherine Jarvis, Pharm.D., Prerequisites – PHRD 3000, P1 status.</td>
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<td></td>
<td>These two sequential (Fall P1, Spring P1) Pass/Fail format introductory pharmacy practice experience (IPPE) courses are comprised of traditional introductory and didactic classes, multiple periods of experiential training, and writing and other assignments.</td>
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<tr>
<td>PHRD 3400</td>
<td>Prin Of Drug Info</td>
<td>1.0 cr.</td>
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<td>Hilda Bi, Pharm.D. Prerequisites – PHRD 3000 P1 status.</td>
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<td>This course is designed to introduce concepts and skills required to locate and evaluate drug literature and to respond to drug information requests in an efficient manner.</td>
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<tr>
<td>PHRD 3410</td>
<td>Health Care Econ</td>
<td>1.0 cr.</td>
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<td>Marianne McCollum, Ph.D. Prerequisites – PHRD 3000, P1 status.</td>
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<td></td>
<td>Knowledge of key concepts of health care economics is essential for successful career development. This course introduces students to these concepts, and provides the background necessary for future courses concerning the structure and financing of health care.</td>
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<tr>
<td>PHRD 3500</td>
<td>Pharmacy Law</td>
<td>2.0 cr.</td>
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<td>Louis Diamond, Ph.D., Prerequisites – PHRD 3000, P1 status.</td>
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<td>The course begins with an introduction to law, including the Constitution, the role of laws and regulations, the judicial system and process, and administrative agencies, with emphasis on regulation of business in general and pharmacy practice in particular.</td>
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<tr>
<td>PHRD 3550</td>
<td>Health Care Ethics</td>
<td>6 cr.</td>
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<td>Louis Diamond, Ph.D., Prerequisites – PHRD 3000, P1 status.</td>
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<td>A course designed to provide students with foundational knowledge and skills in responsible professional behavior that will enable them to competently reflect upon, address and resolve the ethical and social/cultural issues students will confront during their training and professional practice.</td>
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<tr>
<td>PHRD 3600</td>
<td>Sci Founds I</td>
<td>3.0 cr.</td>
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<td>Tom Anchordoquy, Ph.D. Prerequisites – PHRD 3000, P1 status.</td>
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<td>The main goal of this course is to relate general principles of chemistry and energetics (thermodynamics and kinetics) to drug stability and bioavailability, pharmacologic action, and interactions with biological macromolecules.</td>
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<tr>
<td>PHRD 3610</td>
<td>Sci Founds II</td>
<td>4.0 cr.</td>
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<td>David Bain, Ph.D. Prerequisites – PHRD 3600, P1 status.</td>
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<td>The goals of this course are to build a strong knowledge base in biochemistry and cell biology and link biochemical principles to cellular function, describe how various diseases and errors in metabolism relate to biochemical defects in the cell.</td>
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<tr>
<td>PHRD 4100</td>
<td>Prof Skills Dev III</td>
<td>3.0 cr.</td>
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<td>David Thompson, Ph.D., Susan Paulsen, Pharm. D. Prerequisites – PHRD 3150, P2 status.</td>
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<td>This course is the third in a five-semester longitudinal course sequence intended to develop a broad range of skills necessary for current and future pharmacy practice. It is designed to parallel the didactic portion of the curriculum.</td>
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</tbody>
</table>
**PHRD 4200 Instr Methods I**  
Carol Balmer, Pharm.D., P2 status.  
This course focuses on development of essential components of pharmacy-related teaching skills, including preparation of learning objectives, outlines, visual aids, and multiple choice questions, and will review presentation skills.

**PHRD 4300 Exp Prac III**  
Christopher Turner, Ph.D., Samuel Ellis, Pharm.D. (PHRD 4300). Prerequisites – PHRD 3350, P2 status.  
The first of the three, sequential, introductory pharmacy practice experience (IPPE) courses are that comprised of introductory classes, multiple periods of experiential training in a variety of practice settings, presentations by external speakers, writing and self-learning assignments, and exams.

**PHRD 4400 PHC III: Evid-based Prac**  
Rob Valuck, Ph.D. Prerequisites: PHRD 3450, P2 status.  
This course is designed to introduce students to the quantitative methods most commonly used in applied clinical research and prepare them to interpret the results, and evaluate the appropriateness of statistical analyses used in pharmacotherapy research studies.

**PHRD 4500 Health Care Ethics**  
Louis Diamond, Ph.D. Prerequisites: PHRD 3550, P2 status.  
A course designed as a continuation of PHRD 3550.

**PHRD 4600 Clinical Sci Founds**  
David Thompson, Ph.D. Prerequisites – PHRD 3650, P2 status.  
This course is divided into two distinct sections: (i) Biopharmaceutics and Pharmacokinetics, which focuses on the application of basic principles of these disciplines to the clinical use of pharmacological agents with the object of optimizing drug therapy.

**PHRD 4700 IOS III/IV:F,E,A,B,Ren/Card**  
Sheryl Vondracek, Pharm.D. Prerequisites – PHRD 3750, PHRD 3760, P2 status.  
This first part of this course provides students with foundational knowledge of pharmacology and medicinal chemistry of diuretics and pathophysiology and therapeutics of acute and chronic renal failure. The second part deals with the cardiovascular system in health and disease.

**PHRD 5100 Prof Skills Dev V**  
Connie Valdez, Pharm.D., Brian Hemstreet, Pharm.D. Prerequisites – PHRD 4150, P3 status.  
This course is the fifth in a five-semester longitudinal course sequence intended to develop a broad range of skills necessary for current and future pharmacy practice. It is designed to parallel the didactic portion of the curriculum.

**PHRD 5200 Sem on Pharm Iss V**  
Mark Ruscin, Pharm.D., Jacci Bainbridge, Pharm.D. Prerequisites – PHRD 4250, P3 status.  
This one credit hour course will provide the Pharm.D. student the opportunity to participate in a formal, weekly seminar series as a speaker, self-evaluator, active member of the audience, and session coordinator.

**PHRD 5300 Exp Prac V**  
Chris Turner, Ph.D. Prerequisites – PHRD 4250, P3 status.  
The third of the sequential introductory pharmacy practice experience (IPPE) courses that are comprised of introductory classes, multiple periods of experiential training in a variety of practice settings, presentations by external speakers, writing and self-learning assignments, and exams.

**PHRD 5400 PHC VI – Pop Based Prac**  
Patrick Sullivan, Ph.D. Prerequisites – PHRD 4450, P3 status.  
This course will introduce the concepts of pharmacoeconomics in a manner that will build upon the student’s previous exposure to evidence-based pharmacy practice, health economics and the health care system.

**PHRD 5700 IOS IX: Endo, Derm, Opht**  
Laura Hansen, Pharm.D. Prerequisites – PHRD 4750, PHRD 4760, PHRD 4770, P3 status.  
This course is divided into four sections based on organ system (i.e. 1-endocrine (diabetes); 2-opthamology, olics, and dermatology; 3-endocrine (hormones and women’s health); and 4-osteoporosis, corticosteroids, and genitourinary).

**PHRD 5710 IOS X: Infec Dis**  
Jacci Bainbridge, Pharm.D. Prerequisites – PHRD 4750, PHRD 4760, PHRD 4770, P3 status.  
Class is intended to provide student with an understanding of (i) the functioning of the immune system in health and disease, (ii) the role of pathogens in causing infections, and (iii) the therapeutic applications of antimicrobial agents in combating infections.

**PHRD 5720 IOS XI: Infec Dis**  
Brian Hemstreet, Pharm.D. Prerequisites – PHRD 5710, P3 status.  
Continuation of the 5710 second part of the semester.  
This course is intended to provide the student with an understanding of (i) the biology of human pathogens, (ii) the role and mechanisms of various pathogens in causing infections.
PHRD 5800 Pharmknts &Tox  2.0 cr.
Prerequisites – P3 status.
The following topics will be covered: Introduction to PK and ADME, Linear Models, Complicated Linear Models, Linear Multiple Dose, Non-compartmental and System Analysis, Physiologically-based Pharmacokinetics, Urinary Excretion and Hepatic Elimination, Absorption Analysis and Bioavailability.

PHRD 6700 PharmD Clerkship  6.0 cr.
Christopher Turner, Ph.D.

SPRING SEMESTER

PHRD 3150 Prof Skills Dev II  3.0 cr.
David Thompson, Ph.D., Robert Page, Pharm.D. Prerequisites – PHRD 3100
Second semester of three-year course intended to develop broad range of skills necessary for current and future pharmacy practice. Designed to parallel the didactic portion of curriculum, integrating and applying essential knowledge, skills and attitudes required for successful professional career.

PHRD 3350 Exp Prac II  1.0 cr.
Catherine Jarvis, Pharm.D., Christopher Turner, B.Pharm., Ph.D., Prerequisites – PHRD 3300
This course focuses on service learning. Each pharmacy student will be partnered with a small group of elementary school students to teach a series of six general nutrition and physical activity modules.

PHRD 3450 PHC II: US Hlth Care  2.0 cr.
Kavita Nair, Pharm.D. Prerequisites – PHRD 3400
The goal of the course is to educate students about the complexities of the health care delivery system. With an increasing emphasis on prescription medications, now, more than ever, pharmacists are an integral part of the health care system.

PHRD 3650 Prin Drug Action  4.5 cr.
David Thompson, Ph.D. Prerequisites – PHRD 3600; PHRD 3610
Building upon Science Foundations from last semester, this course aims to introduce the student to basic pharmacodynamic and pharmacokinetic determinants of drug action, drug interactions, and the genetic basis for inter-individual differences in response to drug efficacy and toxicity.

PHRD 3750 IOS I: Physiology  4.0 cr.
David Thompson, Ph.D. Prerequisites – PHRD 3600; PHRD 3610
IOS1 introduces students to human physiology through a systematic study of the nervous, motor, cardiovascular, renal, endocrine and gastrointestinal systems.

PHRD 3760 IOS II: Auton Autacoids  3.0 cr.
David Thompson, Ph.D. Prerequisite – PHRD 3750
This course is intended to provide student with understanding of (i) physiology and pathophysiology of autonomic nervous system, nervous somatic system and autacoids, (ii) importance of drug chemical structure on pharmacological and therapeutic actions, (iii) therapeutic applications of drugs which influence or mimic these systems.

PHRD 4150 Prof Skills Dev IV  3.0 cr.
Connie Valdez, Pharm. D., Heather Ulrich, Pharm. D. Prerequisites – PHRD 4100, P2 status.
This is the fourth in a five-semester longitudinal course sequence intended to develop a broad range of skills necessary for current and future pharmacy practice. It is designed to parallel the didactic portion of the curriculum.

PHRD 4250 Instr Methods II  1.0 cr.
Laura Hansen, Pharm.D., Susan Paulsen, Pharm.D., David Hill, Ed.D., FCSHP, Prerequisites – PHRD 4200, P2 status.
This course is intended to reinforce the student's understanding of techniques that are used to develop and effectively present a relevant healthcare topic and prepare the student for future presentations and seminars.

PHRD 4350 Exp Prac IV  2.0 cr.
Christopher Turner, Ph.D. Prerequisites – PHRD 4300, P2 status.
Second year course builds on the first year experiential program to further develop understanding of professional and general competencies required to practice pharmacy and to increase the skill level of students in the application of these competencies in pharmacy practice.

PHRD 4450 PHC IV: Infrmtics  1.0 cr.
Hilda Bi, Pharm.D. Prerequisites – PHRD 4400, P2 status.
This course builds upon previous introductory courses in drug literature evaluation and evidence-based practice.

PHRD 4750 IOS VI: Immunol  4.0 cr.
Carol Balmer, Pharm.D. Prerequisites - PHRD 4700, 4710, 4720, P2 status.
This course covers the normal immune and hematopoietic systems, immunopharmacology and the pathophysiology of diseases that fall into two conceptually distinct, but often overlapping and interrelated areas –
malignancies of solid organ origin and diseases of the immune system.

**PHRD 4760 IOS VII: GI Nutrition**  
Rob MacLaren, Pharm.D.  
Prerequisites – PHRD 4750, P2 status.  
This course is intended to provide the student with an understanding of (i) the functioning of nutrition and the gastrointestinal system in health and disease.

**PHRD 4770 IOS VIII: CNS**  
Jacci Bainbridge, Pharm.D.  
Prerequisites – PHRD 4750, 4760, P2 status.  
This class is intended to provide the student with an understanding of the functioning of the central nervous system (CNS) in health and disease.

**PHRD 5250 Sem on Pharm**  
Jacci Bainbridge, Pharm.D., Mark Ruscin, Pharm.D., Samuel Ellis, Pharm.D.  
Prerequisites – P3 status. Continuation of PHRD 5200.  
This one credit hour course will provide the Pharm.D. student the opportunity to participate in a formal, weekly seminar series as a speaker, self-evaluator, active member of the audience, and session coordinator.

**PHRD 5350 Exp Prac VI**  
Chris Turner, Ph.D.  
Prerequisites – PHRD 5300, P3 status.  
This 2 credit hour course will comprise one period for course introduction and 20 hours of experiential training at a non-pharmacy patient care site. Students will be assigned a non-pharmacist preceptor at their practice site.

**PHRD 5650 Comp Patient Care I**  
Joseph Saseen, Pharm.D., Sheryl Vondracek, Pharm.D., Sunny Linnebur, Pharm.D.  
Comprehensive Patient Care is a Pass/Fail capstone course designed to lend continuity and cohesiveness to the entire curriculum, through integration and application of essential knowledge, skills and attitudes required for a successful professional career.

**PHRD 5850 Ger Pharm Elec**  
Mark Ruscin, Pharm.D., Sunny Linnebur, Pharm.D.  
Prerequisite – P3 status.  
This course is intended to provide the student with an advanced understanding of pharmacotherapy in older adults as well as common medical, psychological, and social issues encountered when caring for older adults.

**PHRD 5855 Ind. Study Elective**  
Susan Paulsen, Pharm.D.  
Prerequisite – P3 status.

**PHRD 5860 Integrative Med Elec**  
Susan Paulsen, Pharm.D.  
Prerequisite – P3 status.  
This two credit, one-semester course is designed to develop a broad knowledge base in the field of complimentary and alternative medicine.

**PHRD 5865 Research Elec**  
Kathleen Stringer, Pharm.D.  
Crosslisted Courses: PHPR 4650, PHSC 4650  
The student is expected to conduct clinical and/or laboratory-based research with a regular, full-time member of the School of Pharmacy faculty.

**PHRD 5870 Pediatric Pharm Elec**  
Catherine Jarvis, Pharm.D.  
Prerequisite – P3 status.  
This course will be offered to students interested in developing and fostering their knowledge and assessment of childhood diseases and pharmacotherapy. Clinical pharmacy specialists and staff from the Children’s Hospital of Denver will teach this course.

**PHRD 5875 Pharm Man Elec**  
David Hill, Ed.D.  
Prerequisites – P3 status.  
An introduction to the principles, skills, and issues important to the successful management of a pharmacy enterprise. While the course is largely concerned with application to community pharmacy, relevant comparisons will be made for the hospital pharmacy setting.

**PHRD 5880 Subst Abuse**  
David Thompson, Ph.D.  
Prerequisite – P3 status.  
This course aims to provide the student with a database concerning the basic pharmacology, toxicology, treatment and biopsychosocial aspects of substance abuse and addiction.

**PHRD 5895 Medical Spanish**  
Connie Valdez, Pharm.D.  
Prerequisite – P3 status.  
This Beginning Medical Spanish course, tailored for pharmacy students, is designed to allow students to become comfortable with conversational Spanish and medical vocabulary in various pharmaceutical contexts. Language learning is both academic and experiential.

**PHRD 6100 Drug Info Portfolio**  
2.0 cr.
Christopher Turner, Pharm.D. Prerequisite – P4 status.

This experiential drug information component of the curriculum is conducted through a longitudinal approach during the clerkship year. Each student will be responsible to develop a portfolio documenting his/her drug information-related activities while on various rotations.

PHRD 6700 PharmD Clerkship 6.0 cr.
Christopher Turner, Ph.D. Prerequisite – P4 status.

SUMMER SEMESTER

PHSC 3030 Intro to Pharm Sci 6.0 cr.
B. Brunson and T. Anchordoquy, Ph.D. Prerequisites - Instructor approval.

Comprehensive course that consists of Biochemistry, Physiology, Pharmaceutics, and preceptor experience. Course is designed to integrate learning skills, problem solving and critical thinking skills with course content and offer students a preview into the diverse options available in pharmacy practice.

PHRD 6700 PharmD Clerkship 6.0 cr.
Christopher Turner, Ph.D. Prerequisite – P4 status.
EXTERNAL DOCTOR OF PHARMACY PROGRAM
(The pharmacy curriculum is subject to change without notice. All courses are restricted to students in the Nontraditional Doctor of Pharmacy Program)

FALL SEMESTER

PRDO 5010 Immunoiology 3.0 cr.
Faculty.
Course includes basic concepts of immunology, immunopathology, immunopharmacology and immunotherapy. This course is recommended prior to ADSM III (Peds/ID) and ADSM IV (Oncol/Rheum DO, PRDO 5340), but is not a prerequisite.

PRDO 5320 ADSM II 4.0 cr.
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management Gastrointestinal Disorders, Nutrition & Critical Care – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for patients with common gastrointestinal and nutritional disorders, and for critical care.

PRDO 5330 ADSM III 4.0 cr.
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Infectious Diseases & Pediatrics – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for infectious diseases and pediatrics disorders.

PRDO 5350 ADSM V 4.0 cr.
Psychiatry, Neurology, and Geriatrics Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Psychiatry, Neurology & Geriatrics – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for neurologic, psychiatric, and geriatric disorders.

PRDO 5360 ADSM VI 4.0 cr.
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Endocrine, Hematology & Pulmonary Disorders – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for patients with endocrinology, hematology, and pulmonary disorders.

PRDO 5700 2.0 cr.
Faculty.
Clinical Skills Foundation- combines three components that provide foundation for ADSM courses: (1) orientation to patient assessment and skills development; (2) pharmacokinetics and pharmacodynamics; (3) advanced disease state management for fluids, electrolytes, and acid-base disorders. Prerequisite for ADSM courses.

SPRING SEMESTER

PRDO 5240 3.0 cr.
D. Casdorph. Prerequisites: PRDO 5460 & PRDO 5560.
Evidence Based Pharmacy Practice – course introduces the pharmacist to the concepts and analytical foundation underlying evidence-based pharmacy practice. Includes fundamentals of research design, biostatistics, data analysis, and pharmacoconomics.

PRDO 5310 ADSM I 3.5 cr.
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Cardiovascular & Renal Disorders – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for patients with common cardiovascular and renal disorders.

PRDO 5340 ADSM IV 4.0 cr.
Faculty. Prerequisites: PRDO 5700; PRDO 5010 recommended.
Advanced Disease State Management: Oncology and Rheumatology Disorders – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment for patients with oncology and rheumatology disorders.

PRDO 5350 ADSM V 4.0 cr.
Psychiatry, Neurology, and Geriatrics Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Psychiatry, Neurology & Geriatrics – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for neurologic, psychiatric, and geriatric disorders.
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<td>PRDO 5360</td>
<td>AMS VI</td>
<td>4.0 cr.</td>
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<td>PRDO 5700</td>
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<td>2.0 cr.</td>
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<tr>
<td>PRDO 5320</td>
<td>AMS II</td>
<td>4.0 cr.</td>
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<tr>
<td>PRDO 5340</td>
<td>AMS IV</td>
<td>4.0 cr.</td>
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<tr>
<td>PRDO 5460</td>
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<td>1.5 cr.</td>
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<tr>
<td>PRDO 5560</td>
<td>Instructional Methods with Seminars in Pharmacal Care</td>
<td>2.0 cr.</td>
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### SUMMER SEMESTER

**PRDO 5360 ADSM VI**
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management: Endocrine, Hematology & Pulmonary Disorders – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for patients with endocrinology, hematology, and pulmonary disorders.

**PRDO 5700**
Faculty.
Clinical Skills Foundation- combines three components that provide foundation for ADSM courses: (1) orientation to patient assessment and skills development; (2) pharmacokinetics and pharmacodynamics; (3) advanced disease state management for fluids, electrolytes, and acid-base disorders. Prerequisite for ADSM courses.

**PRDO 5320 ADSM II**
Faculty. Prerequisite: PRDO 5700.
Advanced Disease State Management Gastrointestinal Disorders, Nutrition & Critical Care – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment, and professional skills development for patients with common gastrointestinal and nutritional disorders, and for critical care.

**PRDO 5340 ADSM IV**
Faculty. Prerequisites: PRDO 5700; PRDO 5010 recommended.
Advanced Disease State Management: Oncology and Rheumatology Disorders – course combines pathophysiology, advanced pharmacotherapeutics management, patient assessment for patients with oncology and rheumatology disorders.

**PRDO 5460**
Faculty. Prerequisites: PRDO 5240 & PRDO 5700
Advanced Drug Literature Evaluation & Clinical Applications – course will strengthen the skills necessary to allow practicing pharmacists to provide accurate, unbiased, and relevant drug information.

**PRDO 5560 Instructional Methods with Seminars in Pharmaceutical Care**
Faculty. Prerequisites: PRDO 5240, PRDO 5460 and 2 ADSM Courses.
Instructional Methods with Seminars in Pharmaceutical Care – provides the pharmacist with basic skills in lecture development and presentation. Presentations include development of powerpoint slides, one short presentation, and a videotaped presentation.