

Theme, Subject and Competency	Required core courses							Required courses for the Pharmaceutics track										Required experiences											
	Term	F	F	S	F/Sp	F	F/Sp	F/Sp	Sp	F																			
	Credit	1	4	4	2/2	3	1-2/ 1-2	1/1	4	4																			
* Exempt if PharmD from ACPE accredited University		Principles of Biochem* PHARM 3011	Pharmacology and Ther* PHARM 3028	Foundations in Pharm Sci PHARM 3023	Grant Writing PHARM 3038	Statistics PHARM 3040 or equivalent	Journal Club Student/mentor choice	Seminar PHARM 3024	Pharmaceutical Analysis PAHRM 2001	Advanced PK PHARM 3002																			
Learning Outcome from the Graduate Program Assessment Matrix: Acquire expert knowledge of biological, chemical, and analytical processes related to pharmaceutical sciences. Master a field of scholarship related to a specific research topic.																													
LITERATURE REVIEW AND EVALUATION																													
Extract literature from appropriate bibliographic sources.					X		X	X																X	X	X		X	
Critique clinical and scientific evidence derived from literature.					X	X	X	X																X	X	X			
Describe the current state of knowledge about a biomedical, clinical, or public health problem.		X			X		X	X																X		X			
Interpret primary research literature within the pharmaceutical sciences					X		X			X																X	X		

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Conduct appropriate experiments to address generated research questions.			X	X				X																			
Evaluate possible problems in the design and execution of a study in the pharmaceutical sciences.			X	X		X	X	X	X																		
Describe the drug development process.			X					X	X																		
STATISTICAL METHODS AND DATA EVALUATION																											
Apply fundamental principles of statistical analysis, such as power analysis, correlation, causation, regression, and summary statistics.				X	X	X			X																X	X	X
Select the appropriate statistical approach for the interpretation of preclinical and clinical datasets.					X	X			X																X	X	X
Define bias in clinical and translational research.					X																						
Develop appropriate conclusions based on results from research data.			X	X		X	X	X																	X	X	X

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Learning Outcome from the Graduate Program Assessment Matrix: Communicate scientific facts, research results and ideas in a clear and compelling way in both oral and written form.																														
<ul style="list-style-type: none"> Write a scientific paper of sufficient quality to be published in a nationally recognized peer reviewed journal Apply knowledge and understanding of ethical research practices (e.g., ownership of data, authorship, falsification and misrepresentation of data, ethical use of animals in research, use of copyrighted material, plagiarism) Prepare a lecture or seminar that has focus and depth, and that presents information in a clear and informative way Write a meritorious grant proposal (i.e., one that is hypothesis-driven, scientifically justified, and appropriately analyzed and interpreted) 																														
GRANTSMANSHIP																														
Defend a written research proposal describing specific aims, significance, innovation, and approach.				X																					X	X				
PREPARATION AND DELIVERY OF ORAL AND WRITTEN SCIENTIFIC INFORMATION																														
Develop presentations describing proposed research, research in progress, or research findings.							X	X																	X	X				
Assess the clinical implications of scientific information.							X	X																	X	X	X			

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Prepare publication/presentation quality abstracts, posters, and manuscripts.				X			X																	X	X	X	X		
Develop an appropriate response to constructive criticism of oral and written presentations.				X			X																	X	X	X	X		

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	Dissert./Thesis Research	Comprehensive Exam	Manuscripts	Presentations at Scientific Conferences	Teaching Micro-credential																			
SCIENTIFIC LEADERSHIP, MANAGEMENT, AND CROSS-DISCIPLINARY TEAMWORK																								
Demonstrate professionalism, interpersonal skills and collegial approaches to teamwork.						X	X															X	X	X
Mentor students in research, clinical, or professional activities.																							X	
Recognize the strengths and limitations of personal research skills.							X												X	X	X			

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ETHICAL CONDUCT OF RESEARCH																											
Recognize scientific misconduct and conflict of interest.				X																						X	

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