

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	F	Sp										
	Credit	1	4	4	2/2	3	1-2/ 1-2	1/1	4	4	3.5	1										
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<p><b>Learning Outcome from the Graduate Program Assessment Matrix:</b> Acquire expert knowledge of biological, chemical, and analytical processes related to pharmaceutical sciences. Master a field of scholarship related to a specific research topic.</p>																						
<b>LITERATURE REVIEW AND EVALUATION</b>																						
Extract literature from appropriate bibliographic sources.				X		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		X		
Interpret primary research literature within the pharmaceutical sciences				X		X			X											X	X	

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<p><b>Learning Outcome from the Graduate Program Assessment Matrix:</b> Use the scientific method to generate, analyze, and interpret scientific data relevant to the identification, analysis, and use of therapeutic agents.</p> <ul style="list-style-type: none"> <li>Generate mechanistic hypotheses based on prior evidence</li> <li>Derive specific predictions that are hypothesis-driven</li> <li>Plan detailed experimental procedures that test specific predictions</li> <li>Gather data via experimentation</li> <li>Appropriately analyze and interpret data</li> </ul>																									
<b>HYPOTHESIS GENERATION</b>																									
Generate a relevant biomedical, clinical, public health, or translational research hypothesis.				X				X												X	X				
Defend the clinical and public health implications of a given research hypothesis.								X												X	X				
<b>RESEARCH METHODS AND STUDY DESIGN</b>																									
Design appropriate experiments to address generated research questions in the pharmaceutical sciences.			X	X					X		X									X	X				

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Conduct appropriate experiments to address generated research questions.				X	X				X											X				
Evaluate possible problems in the design and execution of a study in the pharmaceutical sciences.				X	X		X	X	X	X	X									X	X			
Describe the drug development process.				X					X	X		X												
<b>STATISTICAL METHODS AND DATA EVALUATION</b>																								
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	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	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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<b>SCIENTIFIC LEADERSHIP, MANAGEMENT, AND CROSS-DISCIPLINARY TEAMWORK</b>																						
Demonstrate professionalism, interpersonal skills and collegial approaches to teamwork.						X	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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	<b>ETHICAL CONDUCT OF RESEARCH</b>																					
	Recognize scientific misconduct and conflict of interest.				X															X		

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