Ph.D. in Pharmaceutical Sciences Academic Assessment Plan

College of Pharmacy
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Office of the Provost

University of Florida

Institutional Assessment

Continuous Quality Enhancement

Table of Contents

Academic Assessment Plan Ph.D in Pharmaceutical Sciences

College of Pharmacy

There is only one residential Ph.D. program administered through the College of Pharmacy: ***Ph.D. in Pharmaceutical Sciences***. Under the umbrella of the Ph.D. in Pharmaceutical Sciences (established in 1932) there are five ***graduate concentrations or specialty programs*** that are recognized by the Graduate School. These graduate concentrations/specialties are: Medicinal Chemistry (Medicinal Chemistry Department; recognized in 1978), Pharmacodynamics (Pharmacodynamics Department; recognized in 1989), Pharmaceutical Outcomes and Policy (Pharmaceutical Outcomes and Policy Department; recognized in 1996), Pharmacy (Pharmaceutics Department; recognized in 1998), and Clinical Pharmaceutical Sciences (Pharmacotherapy and Translational Research Department; recognized in 2012).

Tied to each of the residential Ph.D. programs in the College is an associated Master of Science in Pharmacy (M.S.P.) Program. The M.S.P. in the departments of Medicinal Chemistry, Pharmaceutics, Pharmacodynamics and Pharmacotherapy and Translational Research requires each student to prepare and defend a thesis as part of their degree. Pharmaceutical Outcomes and Policy has the option of a thesis or non-thesis M.S.P. degree. In general, departments strongly encourage entering graduate students to pursue the Ph.D. degree. However, students may opt for the M.S.P. degree in their discipline if they find that the Ph.D. degree is not what they desire after entering the program.

A. Mission

College Mission

The College promotes the health and welfare of the citizens of Florida and the Nation by preparing graduates in Pharmacy to take independent professional responsibility for the outcome of drug therapy in patients. Graduates have the scientific and cultural background necessary to assume leadership roles in the profession and the community.

Additionally, the College:

- ***Promotes and fosters graduate education in pharmaceutical, clinical, administrative and psychosocial sciences. Its students are educated to become distinguished contributors to pharmacy and related disciplines.***
- Provides faculty members the opportunity to develop fully as teachers and scholars.
- Supports development of quality research programs, which serve to advance the knowledge and skills of pharmacists, other health care professionals and the associated scientific community.
- Encourages leadership for the continuing professional growth and development of Pharmacy in Florida, nationally, and internationally.
- Cooperates in a service capacity with other institutions in the provision of specialty advanced training, as well as with the state and the profession in areas where the College Faculty possess unique expertise.
- Offers opportunities for practicing pharmacists to maintain and enhance their competencies for professional practice.

Objectives of our Graduate & Postgraduate Education

To prepare graduates who are capable of assuming quality positions in academia, government, and the pharmaceutical industry, or enter academia with the ability to compete for the best positions, the College:

- Promotes an intellectual atmosphere that fosters a high regard for scholarship.
- Encourages the intellectual and professional growth of graduate students, technically in their discipline and as leaders among peers, through faculty mentoring.
- Provides opportunity for students to conduct research at the leading edge of their discipline.
- Trains clinical scientists capable of independent research that will be recognized nationally.
- Attracts students of the highest caliber and potential for scholarly achievement.
- Provides training and experience in teaching.

B. Student Learning Outcomes and Assessment Measures – **Campus mode only**

Student Learning Outcomes	Assessment Method
Knowledge: Apply discipline specific comprehensive knowledge to solve a problem related to the pharmaceutical sciences**.**	Discipline-specific comprehensive knowledge is assessed in three examinations: (1) an oral qualifying exam, (2) a written qualifying exam, and (3) a dissertation defense. These examinations are scheduled to occur at an appropriate time in the student's program. All examinations are constructed by members of the host department or the student's thesis committee and graded according to a rubric as unsatisfactory, competent, or excellent.
Problem-Solving/Critical Thinking SLO: Evaluate a research problem that is related to a discipline within the Pharmaceutical Sciences.	Assess each student's completion of a research proposal and dissertation using a rubric as unsatisfactory, competent or excellent.

Communication SLO: Effectively convey information when talking about a topic that is related to a discipline within the pharmaceutical Sciences.	Assessment of a student's performance by faculty members of the student's home department or thesis committee on student skills in delivering an oral presentation that is based on a simple rubric as unsatisfactory, competent or excellent.

C. Research

The college has five research departments and associated doctoral degree concentrations that are an integral part of the University of Florida Health Science Center. Each of these programs has been highly successful in attracting motivated graduate students who are trained in the various areas outlined below.

In most departments, doctoral students enter their respective graduate concentration and are immediately assigned the graduate coordinator as their mentor, unless they have already identified their advisor prior to beginning their PhD program. The graduate coordinator will remain the graduate student's mentor until such time as they have selected their dissertation advisor (which can be in the first year but must be completed by the end of the second year of the program). In our Pharmaceutical Outcomes and Policy Department entering graduate students are assigned a temporary graduate advisor based on the students' interest and have the student chose their dissertation mentor at the end of the first year. During their first academic year, students engage in a series of graduate courses specific to the given concentration (Pharmacy, Pharmaceutical Outcomes and Policy, Medicinal Chemistry, Pharmacodynamics and Clinical Pharmaceutical Sciences), and participate in both seminar and journal colloquy. Integrated into their first year experiences are designated rotations/exposure through departmental faculty laboratories/research programs so that students can make informed selection of their graduate mentors.

Most students complete selection of their graduate mentors prior to their second graduate year, and if not, they are required to finalize this activity by the end of their second year in the program. The second year of the graduate program involves continuation of core course sequences, elective graduate courses identified by the student and supervisory committee and engagement in their research program. Active participation in seminar and journal colloquy continues as well. At the end of the students second year they take their written and oral comprehensive exams administered by their respective departments and supervisory committees.

The third and fourth years of the graduate program (or more if needed) are dedicated to completing elective courses, participation in seminar and journal colloquy, and completing graduate research hours. Students are also provided ample experiences to present their research at

University, State/Local, National and International conferences. Culmination of the doctoral degree is the submission and defense of the student's dissertation.

Research areas in the College include:

Medicinal Chemistry

The mission of the department of Medicinal Chemistry is to conduct basic research in chemistry and biochemistry as it relates to drug discovery and development, to teach these principles in the professional and graduate programs, and to provide service to the scientific community. Medicinal Chemistry is a unique blend of the physical and biological sciences. Areas of active interest include: drug design and discovery, organic synthesis and development of medicinal agents, natural products chemistry, mechanisms of drug action, prodrugs, topical drug delivery, peptide and peptoid chemistry, development of molecular screening platforms, functional genomics, drug metabolism and molecular toxicology.

Pharmaceutical Outcomes & Policy

Pharmaceutical Outcomes and Policy faculty and students work in various complementary areas of research. Pharmacoepidemiology is the study of the uses and effects of drugs in human populations related to drug safety, pharmacovigilance, comparative effectiveness, drug utilization, and risk management. The Patient Safety and Program Evaluation specialization evaluates the quality of medication use and medication use systems and determines barriers and root causes related to patient safety issues and medication errors. Research is expected to lead to direct improvements of the medication use system, changes in healthcare delivery, or public policy. Behavioral and Social Science Research in Medication Use is the study of the psychological and social processes associated with medication use that predict or influence health outcomes. Pharmacoeconomics evaluates the clinical, economic, and humanistic aspects of pharmaceutical products, services, and programs to provide health care providers and patients with information needed to efficiently allocate health care resources.

Pharmaceutics

Pharmaceutics encompasses basic, applied, and clinical investigations in pharmacokinetics/ biopharmaceutics, pharmaceutical analysis, pharmaceutical biotechnology and drug delivery, gene therapy, and herbal medicine. Researchers work mainly with anti-infective agents, corticosteroids, analgesics and other CNS drugs. Another area of interest is the assessment of food and drug interactions, particularly with grapefruit juice. Pharmacometrics research is focused on dose optimization during drug development and clinical practice. Researchers perform preclinical and clinical pharmacokinetic studies and collected data is analyzed in integrated PK/PD-models which allow investigators to identify optimum doses and simulation of various clinically relevant scenarios.

Pharmacodynamics

Pharmacodynamics research is at the interface of pharmacology, physiology, neuroscience, and pathology. Researchers rely on a combination of molecular, biochemical, cellular and behavioral tools. The research goals are to understand normal physiology, pathophysiology, and drug action in a variety of contexts. Specific areas of research interest include, geriatric memory dysfunction, drug addiction, epilepsy, Parkinson's disease, stress, hypertension and physiological adaptations to pregnancy.

Pharmacotherapy & Translational Research

Pharmacotherapy & Translational Research focuses in areas of pharmacy practice, education and clinical research. Researchers are leading a national consortium in personalized medicine – the study of how genes affect the way our bodies respond to medicines, and how to optimize the correct dose and avoid toxicity for the individual. Researchers in the department include a wide range of specializations, such as pharmacogenomics, clinical Pharmaceutical Sciences, asthma, medication therapies for diabetes and heart disease, emerging pathogens, anti-HIV drugs, medication therapy management, autoimmune diseases, and therapeutic efficacy, and toxicity of medications. Researchers also investigate interaction between the over-the-counter supplement and prescription drugs, and antimicrobial resistance in antibiotics.

D. Assessment Timeline

Use this Assessment Timeline template for your plan. Add or delete rows and columns to accommodate your SLOs and assessments.

Program – Ph.D. in Pharmaceutical Sciences College - Pharmacy

Assessment SLOs	Assessment 1	Assessment 2	Assessment 3
Knowledge			
Comprehensive knowledge of specific Pharmaceutical Science discipline	Comp Written exam	Comp Oral Exam & Dissertation proposal	Dissertation Defense
Problem-Solving/Critical Thinking			
Evaluation of research problem in a given Pharmaceutical Science discipline	Comp Written exam	Comp Oral Exam & Dissertation proposal	Dissertation Defense
Professional Behavior & Communication			
Ability to effectively communicate and discuss a discipline in the pharmaceutical sciences.	Comp Written exam	Comp Oral Exam & Dissertation proposal	Dissertation Defense

E. Assessment Cycle

Use this Assessment Cycle template for your plan. Add or delete rows as needed to accommodate your SLOs.

Assessment Cycle for:
PhD Program in Pharmaceutical Sciences College Pharmacy

Analysis and Interpretation: May-June of each year
Program Modifications: Completed by August of each year
Dissemination: Completed by September of each year

Year SLOs	10-11	11-12	12-13	13-14	14-15	15-16
Knowledge						
Comprehensive knowledge of specific Pharmaceutical Science discipline		X	X	X	X	X
Problem-Solving/Critical Thinking						
Evaluation of research problem in a given Pharmaceutical Science discipline		X	X	X	X	X
Professional Behavior & Communication						
Ability to effectively communicate and discuss a discipline in the Pharmaceutical Sciences.		X	X	X	X	X

We began assessments through our on-line evaluation in May of 2012 and will continue yearly in the future for all SLOs in the program.

F. Measurement Tools

Measurement tools involve a combination of methods within the Pharmaceutical Sciences doctoral program. ***Knowledge***, ***problem-solving/critical thinking*** and ***professional behavior & communication*** SLOs are measured throughout the course of study. This is accomplished through advanced-level courses in a specific discipline or concentration as well as preparation and presentation of seminars and journal colloquy within faculty members who teach the courses.

Direct monitoring of the Pharmaceutical Sciences SLOs occurs three times though a respective student's course of study; (1) a written comprehensive exam, (2) oral comprehensive exam and (3) dissertation defense. A rubric for each of these assessments has been developed that allows for a direct scoring of criteria in each rubric followed by a summation and overall scoring that permits an overall assessment as excellent, competent and unsatisfactory. Please see Appendices A, B and C for the Written Comprehensive Exam, Oral Comprehensive exam and Dissertation Defense rubrics, respectively. Currently these rubrics are utilized by hard copy only.

Respective rubric assessment results, student and program data are then manually entered by either the graduate mentor or their designee into an electronic data capturing form using a form generator called ***Rackforms*** (formerly known as FormBoss, www.rackforms.com). This system allows selected users to create form, input data and view all input materials from each rubric with

minimum effort. ***Rackforms*** then saves the information to its own database which has security measures such as username and passwords, limit failed password attempts, and unique data entry based on individual IP addresses. Our current form uses a username and password to access the form. ***Rackforms*** then saves the data in its own database, in which all pertinent data can easily be exported into a tab-delimited file that can open in Excel and the data tabulated and quantified for each PhD concentration in the college. These data subsets are collected centrally in the Associate Dean for Graduate Affairs Office and then submitted to each department for individual concentration assessment on an annual basis as noted in **Section E. - Assessment Cycle**; above.

In the future we hope to develop an electronic submission process whereby the data from each rubric will be captured, sorted and prepared for annual assessment by individual concentrations in the college without any manual reentry of the data.

Indirect assessments of each concentration are completed through exit interviews for each student and are coordinated and maintained by the Associate Dean for Graduate Studies and office staff.

G. Assessment Oversight

Here, list the names and contact information of those who oversee the assessment process in your program. Add or delete rows as needed.

Name	Department Affiliation	Email Address	Phone Number
William J. Millard	Dean's Office	millard@cop.ufl.edu	273-6311
Almut Winterstein	Pharmaceutical Outcomes and Policy	almut@cop.ufl.edu	273-6258
Anthony Palmieri	Pharmaceutics	palmieri@cop.ufl.edu	273-7868
Hendrik Luesch	Medicinal Chemistry	luesch@cop.ufl.edu	273-7738
Jason Frazier	Pharmacodynamics	frazier@cop.ufl.edu	273-7686
Taimour Langaee	Pharmacotherapy and Translational Research	Langaee@cop.ufl.edu	273-6357

Appendix A: Rubric for Use in Written Qualifying Examinations for the PhD in Pharmaceutical Sciences

Name of candidate: Program:

	Assessment	
Criteria	**Satisfactory**	**Unsatisfactory**
Demonstrates sound and comprehensive knowledge of the specific discipline in the pharmaceutical sciences. ***(Measures Knowledge SLO)***		
Demonstatres the ability to evaluate and/or solve a research problem in their given discipline. ***(Measures Problem Solving/Critical Thinking SLO)***		
Prepared for research: Demonstrates capability for supervised research in the area of study, preparedness in core disciplines relevant to the research discipline, and ability to complete research in the proposed area. ***(Measures Knowledge and Problem Solving/Critical Thinking SLOs)***		
Quality of written communication: Communicates ideas clearly and professionally in written form. ***(Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs)***		
Places the proposed research area into a larger context, and, where appropriate, discusses potential applications. ***(Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs)***		
Overall Score (satisfactory only)	0	

Assessment Rating:
Excellent is an overall satisfactory score of **5**
Competent is an overall satisfactory score of **3 or 4**
Unsatisfactory is an overall score of **2 or lower**

pass did not pass

Passing is by approval of the supervisory committee and requires an assessment rating of excellent or competent. The committee is encouraged to recommend ways for the candidate to improve those areas needing attention.

Date:_____

Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____

Rubric approved by the Graduate Studies Committee on 02/14/2013

Appendix B: Rubric for Use in Oral Qualifying Examinations for the PhD in Pharmaceutical Sciences

Name of candidate: Program:

	Assessment	
Criteria	**Satisfactory**	**Unsatisfactory**
Demonstrates sound and comprehensive knowledge of the specific discipline in the pharmaceutical sciences. (***Measures Knowledge SLO***)		
Demonstatres the ability to evaluate and/or solve a research problem in their given discipline. (***Measures Problem Solving/Critical Thinking SLO***)		
Prepared for research: Demonstrates capability for supervised research in the area of study, preparedness in core disciplines relevant to the research discipline, and ability to complete research in the proposed area. (***Measures Knowledge and Problem Solving/Critical Thinking SLOs***)		
Quality of oral communication: Communicates ideas clearly and professionally in oral form. (***Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs***)		
Places the proposed research area into a larger context, and, where appropriate, discusses potential applications. (***Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs***)		
Overall Score (satisfactory only)	0	

Assessment Rating:
Excellent is an overall satisfactory score of **5**
Competent is an overall satisfactory score of **3 or 4**
Unsatisfactory is an overall score of **2 or lower**

pass did not pass

Passing is by approval of the supervisory committee and requires an assessment rating of excellent or competent. The committee is encouraged to recommend ways for the candidate to improve those areas needing attention.

Date:_____

Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____

Rubric approved by the Graduate Studies Committee on 02/14/2013

Appendix C: Rubric for Use in Dissertation Defenses for the PhD in Pharmaceutical Sciences

Name of candidate: Program:

	Assessment	
Criteria	**Satisfactory**	**Unsatisfactory**
Demonstrates sound and comprehensive knowledge of the specific discipline in the pharmaceutical sciences. (***Measures Knowledge SLO***)		
Demonstatres the ability to evaluate and/or solve a research problem in their given discipline. ***(Measures Problem Solving/Critical Thinking SLO)***		
Prepared for research: Demonstrates capability for independent research in the area of study, preparedness in core disciplines relevant to the research discipline, and ability to complete research in the proposed area. ***(Measures Knowledge and Problem Solving/Critical Thinking SLO*** s)		
Quality of oral communication: Communicates ideas clearly and professionally in oral form. ***(Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs)***		
Quality of written communication: Communicates ideas clearly and professionally in written form. ***(Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs)***		
Places the completed research area into a larger context, and, where appropriate, discusses potential applications. ***(Measures Knowledge, Problem Solving/Critical Thinking and Communication SLOs)***		
Overall Score (satisfactory only)	0	

Assessment Rating:
Excellent is an overall satisfactory score of **6**
Competent is an overall satisfactory score of **5 or 4**
Unsatisfactory is an overall score of **3 or lower**

pass did not pass

Passing is by approval of the supervisory committee and requires an assessment rating of excellent or competent. The committee is encouraged to recommend ways for the candidate to improve those areas needing attention.

Date:_____

Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____
Committee Member:_____ Signature:_____

Rubric approved by the Graduate Studies Committee on 02/14/2013

Figure 1. University of Florida Graduate/Professional Program Assessment Plan Review Rubric

Related resources are found at http://www.aa.assessment.edu

Program: Year:

Component	Criterion	Rating			Comments
		Met	**Partially Met**	**Not Met**	
Mission Statement	Mission statement is articulated clearly.				
	The program mission clearly supports the College and University missions, and includes specific statements describing how it supports these missions.				
Student Learning Outcomes (SLOs) and Assessment Measures	SLOs are stated clearly.				
	SLOs focus on demonstration of student learning.				
	SLOs are measurable.				
	Measurements are appropriate for the SLO.				
Research	Research expectations for the program are clear, concise, and appropriate for the discipline.				
Assessment Map	The Assessment Map indicates the times in the program where the SLOs are assessed and measured.				
	The Assessment Map identifies the assessments used for each SLO.				
Assessment Cycle	The assessment cycle is clear.				
	All student learning outcomes are measured.				
	Data is collected at least once in the cycle.				
	The cycle includes a date or time period for data analysis and interpretation.				
	The cycle includes a date for planning improvement actions based on the data analysis.				
	The cycle includes a date for dissemination of				

	results to the appropriate stakeholders.				

University of Florida Graduate/Professional Program Assessment Plan Review Rubric, continued

Component	Criterion	Rating			Comments
		Met	Partially Met	Not Met	
Measurement Tools	Measurement tools are described clearly and concisely.				
	Measurements are appropriate for the SLOs.				
	Methods and procedures reflect an appropriate balance of direct and indirect methods.				
	The report presents examples of at least one measurement tool.				
Assessment Oversight	Appropriate personnel (coordinator, committee, etc.) charged with assessment responsibilities are identified				