Master of Science in Pharmaceutical Sciences

James L. Winkle
College of Pharmacy

2014

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I. Program Overview

Your program overview should incorporate the values and philosophy of the program, and the vision of what students will be able to do upon completion of the program. A program overview might include a brief history and philosophy of the program, the type of students to be served, the academic environment and primary focus of the curriculum, faculty roles, the contributions to and connections with the community, the role of research, and a stated commitment to diversity and nondiscrimination. A program overview should consistent with the University of Cincinnati mission statement and written with the student audience in mind.

The James L. Winkle College of Pharmacy at University of Cincinnati (UC) is committed to providing exemplary education, training and research programs for professional students, graduate students, and postgraduate trainees, in the service of public interest. Central to this mission is the graduate program in Pharmaceutical Sciences that is dedicated to (1) foster development of the next generation of pharmaceutical scientists, (2) educate them to be leaders in their field, (3) advance scientific discovery and innovation by conducting exceptional basic, translational, clinical and health policy research. Through learning, scholarship and global engagement, the Winkle College of Pharmacy and affiliated training faculty are striving to improve the quality of life locally, regionally, and globally.

The graduate program in Pharmaceutical Sciences at the UC Winkle College of Pharmacy was established in 1970 and has successfully prepared students for challenging careers as tenure or non-tenure track faculty in academic institutions within the U.S. and abroad, scientific staff of various government agencies, including the U.S. Food & Drug Administration, as well as diverse research and management positions within private industry that focus on development of drugs, medical devices, and consumer health care products such as cosmetics. Faculty members who are recognized nationally and internationally for their contributions to the multidisciplinary field of pharmaceutical sciences afford opportunities for cutting edge MS thesis research training in pre-clinical, translational, clinical, and health policy research. Graduate students will be able to participate in collaborative research projects within UC (e.g., College of Medicine and College of Engineering), other regional/national universities (e.g., The Ohio State University and the University of San Francisco, CA), pharmaceutical and consumer health care industry partners such as Pfizer and Procter & Gamble, contract research organizations (CROs, including Medpace, CTI), and various state and federal government agencies (e.g., Ohio Department of Medicaid and U.S. Food & Drug Administration). Matriculated graduate students will experience an academic environment in which they learn research techniques required to successfully complete their thesis projects. During this training, students will also enhance their problem solving skills and practice effective teamwork that will prepare them for emerging leadership positions within the prosperous Pharmaceutical Sciences field.

We are committed to excellence and diversity of our students and provide competitive financial assistance in form of tuition and stipend scholarships to facilitate graduate training of highly qualified applicants.
II. Program Outcomes

Please include in this section your program learning outcomes as they are listed in the P-1 form in eCurriculum. If you are already planning to revise those program learning outcomes, indicate in this section which ones might be changed, and what the new program learning outcomes are likely to be. In general, learning outcomes should be measurable, assessable, or observable in some way and aligned with national standards.

The graduate program training faculty established targeted ability-based program outcomes emphasizing a graduate’s skills now and in the future to advance scientific discovery and innovation by conducting exceptional basic, translational, clinical, and health policy research. These outcomes will be tracked to ensure each student’s transitional growth across the curriculum, including performance-based research activities. Achievement of these outcomes enables graduates to make relevant contributions for improving the quality of life locally, regionally and globally.

- Integrate contributions of basic sciences with the objective to advance pharmaceutical sciences research.
- Apply highest ethical standards to design, evaluation, and presentation of research studies.
- Design experimental studies under consideration of appropriate controls and statistical relevance.
- Implement contemporary laboratory techniques to test a defined research hypothesis.
- Evaluate reliable literature sources for new approaches to advance research.
- Display effective oral and written communication skills to ensure success in professional activities.
- Establish a personal career development plan that identifies specific short and long-term goals, incl. strategies to implement, achieve, and assess these goals.
III. Curriculum/Program Map

Please include in this section a grid that identifies connections that exist between required courses in this program and the corresponding program-level learning outcomes. In other words: how will program outcomes be met? This grid should further indicate the expected levels of learning at each level (whether emerging, strengthening, or achieved). The CET&L web site includes templates that you might find useful in completed this grid.
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</tr>
</thead>
<tbody>
<tr>
<td>I/E: Introduced/Emerging</td>
<td>D: Developing</td>
<td>A: Achieved</td>
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</tr>
</tbody>
</table>

### OUTCOMES

- **Integrate contributions of basic sciences to advance pharmaceutical sciences research**

- **Apply highest ethical standards to design, evaluation, and presentation of research studies**
  - I I/E/D D A D

- **Design experimental studies under consideration of appropriate controls and statistical relevance**
  - I/E I/E/D D A D

- **Implement contemporary laboratory techniques to test a defined research hypothesis**
  - I/E/D D D/A D

- **Evaluate reliable literature sources for new approaches to advance research**
  - E D I/E/D D A D I/E/D

- **Display effective oral and written communication skills to ensure success in professional activities**
  - I/E I/E/D I/E/D D A D I/E/D D

- **Establish a personal career development plan that identifies specific short and long-term goals, incl. strategies to implement, achieve, and assess these goals**
  - I/E D/A D/A

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* Do not list courses, experience & artifacts controlled by external academic units, since you can only assess program outcomes controlled by your program. If your program requires courses outside of your control, moving forward the expectation is units will share assessment findings so the needs of all the programs are addressed.
* Experiences: Non-course based activities of your students such as a performance, a clinical, internships.
* Artifacts: Student-produced products used as evidence for assessment activity.
IV. Methods and Measures

*Please include in this section a description of the assessment methods that your program plans to use in assessing each of its program learning outcomes. These methods ideally include both direct and indirect examples of student learning, with authentic, performance-based assessment performed at all levels. You may find it helpful to include the “Assessment Measures Alignment Matrix” from Activity 5.*
<table>
<thead>
<tr>
<th>Program Outcome</th>
<th>Assessment Tools</th>
<th>Course/ Experience</th>
<th>Time Line</th>
<th>Responsible Person</th>
</tr>
</thead>
</table>
| Integrate contributions of basic sciences to advance pharmaceutical sciences research | • Literature review (I/E)  
• Oral presentation (E/D)  
• Thesis (D/A) | • Journal Club  
• Principles of PharmSci; Advanced Pharmaceutics, Seminar  
• Thesis Research | • Fall term  
• Fall & Spring terms | • Course Director  
• Supervisory Faculty |
| Apply highest ethical standards to design, evaluation, and presentation of research studies | • Self-reflection (I/E/D)  
• Performance assessment (E/D)  
• Thesis (D/A) | • Committee meeting  
• Research in PharmSci  
• Thesis Research & Thesis | • At least 1x/year  
• 1x/year  
• 1x/year | • Supervisory Faculty  
• Supervisory Faculty  
• Supervisory Faculty |
| Design experimental studies under consideration of appropriate controls and statistical relevance | • Self-reflection (I/E/D)  
• Performance assessment (E/D)  
• Thesis (D/A) | • Committee meeting  
• Research in PharmSci  
• Thesis Research & Thesis | • At least 1x/year  
• 1x/year  
• 1x/year | • Supervisory Faculty  
• Supervisory Faculty  
• Supervisory Faculty |
| Implement contemporary laboratory techniques to test a defined research hypothesis | • Performance assessment (E/D)  
• Thesis (A)  
• Self-reflection (D/A)  
• Oral presentation (I/D) | • Research in PharmSci  
• Thesis Research & Thesis  
• Committee meeting  
• Seminar & Committee meeting | • 1x/year  
• 1x/year  
• At least 1x/year  
• At least 1x/year | • Supervisory Faculty  
• Supervisory Faculty  
• Faculty & Supervisory Faculty |
| Evaluate reliable literature sources for new approaches to advance research | • Oral presentation (I/D)  
• Self-reflection (D/A)  
• Oral defense (A)  
• Critique (E/D) | • Principles of PharmSci; Advanced Pharmaceutics  
• Committee meeting  
• Thesis Research & Thesis  
• Seminar & Committee meeting | • Fall & Spring terms  
• At least 1x/year  
• 1x/year  
• At least 1x/year | • Course Directors  
• Supervisory Faculty  
• Supervisory Faculty  
• Faculty & Supervisory Faculty |
| Display effective oral and written communication skills to ensure success in professional activities | • Oral presentation (I/D)  
• Self-reflection (D/A)  
• Oral defense (A)  
• Critique (E/D) | • Principles of PharmSci; Advanced Pharmaceutics  
• Committee meeting  
• Thesis Research & Thesis  
• Seminar & Committee meeting | • Fall & Spring terms  
• At least 1x/year  
• 1x/year  
• At least 1x/year | • Course Directors  
• Supervisory Faculty  
• Supervisory Faculty  
• Faculty & Supervisory Faculty |
Establish a personal career development plan that identifies specific short and long-term goals, incl. strategies to implement, achieve, and assess these goals

<table>
<thead>
<tr>
<th>Exit survey (A)</th>
<th>Plan of Study (D/A)</th>
<th>Self-reflection (D/A)</th>
<th>Observations (D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit survey</td>
<td>Plan of Study</td>
<td>Annual reports</td>
<td>Committee meetings</td>
</tr>
<tr>
<td>once</td>
<td>once or twice</td>
<td>At least 1x/year</td>
<td></td>
</tr>
<tr>
<td>Program Director</td>
<td>Supervisory Faculty</td>
<td>Program Director</td>
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<td>Program Director</td>
<td>Supervisory Faculty</td>
<td>Program Director</td>
<td>Supervisory Faculty</td>
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</table>
IV. Assessment Infrastructure

Please include in this section a description of the process by which your program intends to assess its learning outcomes.

- Describe which program faculty will be charged with overseeing the execution of the assessment plan as well as the ways in which they will carry out that charge, including a description of the planned timeline for assessment.
- Identify what kinds of administrative support will be available for those faculty.

Please note that assessment plans should be capable of producing reports annually based on their review of the relevant data from their programs. The work of your faculty might also be coordinated and aligned with similar assessment efforts at the college and institutional levels.

Assessment Personnel

The Graduate Program Assessment Committee (GPAC) is comprised of five graduate training faculty, one alum, and one current MS/PhD student. Equal representation of graduate training faculty with teaching responsibilities in various tracks is required. The composition and charges of this committee are subject to all-faculty approval for inclusion in the College By-Laws. The GPAC is the coordinating body through which faculty-driven assessment for the Graduate Program is carried out. The GPAC is charged with the development of assessment plans, processes, and evaluation of assessment data. All new processes developed are then vetted by the entire Graduate Program Committee (GPC) before seeking approval by all graduate training faculty. All assessment data viewed by the GPAC is provided to the GPC for review and action, if necessary. Typically, curricular and assessment information and resulting recommendations are subsequently disseminated to graduate training faculty for final approval. The GPAC and GPC are administratively supported by an Assistant Director for Graduate Studies.

Assessment Schedule

Data are collected annually at the end of the spring semester for course-embedded assessments. Plan of Study, Committee meeting reports, Thesis defense, and Exit interview data are collected throughout the academic year. However, data analysis of these administrative experiences is conducted during the summer months together with the self-reflection submitted by graduate students as part of the annual report requirement. The results of this analysis will be reviewed by the GPAC in September, and findings are reported to the GPC in October. Specifically, the GPAC report will address whether program outcomes are met or deficiencies have been identified that require programmatic adjustments. Initially, these reports will be used to generate baseline data. After 2-3 years of data collection, the GPC will use these baseline data to define expected levels of achievement for each program outcome. If deficiencies are identified, the Graduate Program Director will lead discussions within the GPC on potential strategies that could effectively correct the issues identified. Possible
strategies include refinement of assessment tools and revision of course-specific learning outcomes. Assistance from CET&L can be requested to help facilitating implementation of necessary adjustments.
v. Findings

Here you will describe and explain in this section any multi-year patterns and trends that your assessment efforts have identified, including a description of any relevant relationships to national standards.

vi. Use of Findings

In this final section, you will describe how your program intends to make use of the program-level assessment data it has gathered.

• How will this information be presented to and discussed among the faculty?
• How might this data or these discussions result in review and possible revision of course or program learning outcomes and pedagogical strategies?