PHD IN EXPERIMENTAL THERAPEUTICS

Experimental therapeutics is the integration of basic and applied sciences focused on the study and development of new treatments for human disease. Research in experimental therapeutics seeks to understand human diseases from the molecular level to the whole organism in order to develop rational approaches for new pharmacological treatments. In addition, experimental therapeutics includes the development of new therapies through systematic investigation at increasing levels of complexity ranging from individual molecules and proteins, to cellular and tissue based assays and to the whole organism. The purpose of the program is to train students at the doctoral level who can translate discoveries in the laboratory to therapies in a clinical setting.

Satisfactory completion of a bachelor's degree in chemistry, biology, pharmaceutical sciences, pharmacy or a related discipline is required.

The ability to excel in graduate studies and research must be evident based on grades from undergraduate studies, recommendations from college faculty and performance in research and independent study. The Graduate Record Exam (GRE) is not required for admission, but it is highly recommended that a score be submitted for international students.

Students with M.S. degrees in pharmacology or related fields (e.g., pharmaceutical sciences) may be also admitted to the program. However, they are expected to have a minimum of 30 credits at the Master's level prior to accruing doctoral level credits.

Code	Title	Hours
PHCL 5700	Pharmacology I: Principles of Pharmacology, Autonomic Pharmacology and Related Pharmacology [1]	3
PHCL 5100/7100	Experimental Therapeutics I	3
PHCL 5200/7200	Experimental Therapeutics II	3
PHCL 5770/7770	Current Topics in Toxicology I [2]	1
PHCL 6650/8650	Seminar in Experimental Therapeutics (Minimum 6 hours required)	2
PHCL 5460/7460	Current Topics in Pharmacokinetics Toxicokinetics [3]	1
PHCL 5440/7440	Current Topics in Interpretation of Pharmaceutical Data [4]	1
PHCL 6300/8300	Research Experience in Experimental Therapeutics [5]	2-6
PHCL 8960	Dissertation Research in Experimental Therapeutics [6]	1-15
INDI 6020/8020	On Being a Scientist	1
MBC 6190/8190	Advanced Medicinal Chemistry	4
or		
PHCL 5500/7500	From Experimental to Applied Therapeutics	4

[1] Not required if this same course, or PHCL 3700 or equivalent was taken previously. If taken by Masters' students admitted to the program with eligibility to take 7/8 level courses, the PHCL 5700 credit will not count toward those credits required for the Ph.D. degree.

[2] Requires PHCL 4730 or PHCL 5730 as pre-requisite or PHCL 5730 as co-requisite. If PHCL 5730 taken by Masters' students admitted to the program with eligibility to take 7/8 level courses, the credit for this course will not count toward those required for the Ph.D. degree.

[3] Requires PHCL 4160 or PHCL 6160 as pre-requisite or PHCL 6160 as co-requisite. If PHCL 6160 taken by Masters' students admitted to the program with eligibility to take 7/8 level courses, the credit for this course will not count toward those required for the Ph.D. degree.

[4] Requires PHCL 6710 as pre- or co-requisite. If taken by Masters' students admitted to the program with eligibility to take 7/8 level courses, the credit for this course will not count toward those required for the Ph.D. degree.

[5] To fulfill the required laboratory rotations, a minimum of 4 hours must be taken in two different sections of the course (2 hours in each).

[6] A minimum of 30 hours is required.

Additional Requirements

In addition, all students must satisfy the following:

1. Minimum of 90 semester hours of graduate credit, including a minimum of 30 semesters hours at the Masters level, and a Minimum of 60 semester hours of graduate credit beyond the master's level. The required minimum 60 credits beyond the Masters level should include a minimum of 30 hours of Ph.D. dissertation research.
2. Students admitted with a minimum of 30 semester hours at a Masters level should sign up for 7/8 level classes, if their Masters degree was conferred by a USA university. Students admitted with a Bachelor's degree or a foreign graduate degree should sign up for 5/6 level classes for the first 30 credit, and for 7/8 level classes thereafter.
3. With the approval of the department graduate committee, certain courses taken in a foreign university may be considered as equivalent to some of the program courses or for full-filling pre-requisite requirements
4. A grade of B- or higher is expected to be maintained for the required courses. A grade of B- or higher is also required for all of the pre-requisite courses.
5. A cumulative graduate GPA of 3.0 or higher must be maintained.
6. Satisfactory overall performance is expected on a written qualifying examination, which is administered after completion of the required graduate courses for that exam. The qualifying examination covers the following graduate courses, including their pre- and/or co-requisites:
7. Selection of a doctoral research adviser, preparation of an acceptable written Ph.D. dissertation proposal in consultation with the adviser, and the satisfactory oral defense of the proposal before the dissertation advisory committee. The written qualifying examination and the defense of the dissertation proposal will constitute the examination requirements necessary for advancement to candidacy for the Ph.D. in Experimental Therapeutics. The chair of the doctoral dissertation advisory committee will be the student's doctoral research adviser. The dissertation advisory committee will consist

of at least two additional faculty members plus one member from outside the student's department or college.

8. Subsequent to admission to candidacy for the Ph.D. degree, the student is expected to spend a minimum of two semesters in full-time study at The University of Toledo.
9. Preparation of a Ph.D. dissertation based on the results of an original research investigation performed by the student during his/her Ph.D. program at The University of Toledo.
10. Successful oral defense of the dissertation before the dissertation advisory committee and presentation of the results of the dissertation research in a seminar before the department of pharmacology.
11. Acceptance of the dissertation by the Ph.D. dissertation adviser and the dissertation advisory committee.

- PLO 1. Interpret and critically evaluate the literature in the respective discipline and identify gaps in current knowledge.
- PLO 2. Design, implement, and analyze the results of an independent research project in the respective discipline.
- PLO 3. Effectively communicate and defend research findings orally and in writing.
- PLO 4. Describe and comply with standards of ethical conduct of research, including the use of experimental subjects.
- PLO 5. Effectively work in a team of colleagues within the discipline.
- PLO 6. Teach and mentor other researcher.
- PLO 7. Write a competitive application for research funding.
- PLO 8. Produce publishable research.