

# PHARMACEUTICAL SCIENCES, M.S.

## Learning Outcomes

1. Students will demonstrate a basic knowledge of the theories, principles and methods underlying the pharmaceutical sciences as they relate to the area of emphasis.
2. Students will identify a research problem, formulate a research plan, analyze data and communicate findings through oral presentations, abstracts, and papers.
3. Students will critically analyze and synthesize relevant literature.

## Drug Discovery and Biomedical Sciences

The concentration in Drug Discovery and Biomedical Sciences requires a minimum of 30 hours beyond the baccalaureate (or Doctor of Pharmacy) degree, including at least 9 credit hours of thesis preparation. The MS degree requirements include an admission-to-candidacy examination, a comprehensive examination, and a thesis.

## Pharmaceutical Outcomes Sciences

The concentration in Pharmaceutical Outcomes Sciences requires a minimum of 30 hours beyond the baccalaureate (or Doctor of Pharmacy) degree, including at least 6 credit hours of thesis preparation. The MS degree requirements include an admission-to-candidacy examination, a comprehensive examination, and a thesis.

## MS Degree, Drug Discovery and Biomedical Sciences Concentration

1. A research advisor must be chosen by the end of the first year.
2. Admission to candidacy must occur by the end of the third semester, and includes the following:
  - a. Submission of a program of study form. Satisfactory completion of all coursework taken in the first three semesters will be evaluated by the committee.
  - b. Submission of a written initial research proposal, followed by an oral presentation and defense of the proposal to the thesis committee.
3. The comprehensive written and oral examination must be completed.
4. A written thesis, along with an oral presentation and defense, is required for the completion of the MS degree.

In addition to the general requirements listed above, candidates for the MS degree are required to complete two departmental seminar courses.

| Course  | Title  | Credits   |
|---|--|-----------|
| <b>Required Courses:</b>                        |  |           |
| PHAR 700  | Principles of Pharmacology, Medicinal Chemistry, and Pharmaceutics | 4         |
| PHAR 701  | Current Topics in Pharmaceutical Sciences                          | 4         |
| PHAR 712A                                       | Seminar in Pharmaceutical Sciences <sup>1</sup>                    | 1         |
| PHAR 712B                                       | Seminar in Pharmaceutical Sciences <sup>1</sup>                    | 1         |
| PHAR 799  | Thesis Preparation   | 1-6       |
| <b>Select 11 hours of electives<sup>2</sup></b> |  | <b>11</b> |

<sup>1</sup> A maximum of 2 hours credit can be earned for PHAR 712.

<sup>2</sup> Electives will be chosen based on the needs of the graduate student. Areas of emphasis include Biomedical Chemistry, Synthetic Medicinal Chemistry, Pharmaceutics, and Pharmacology. Electives will be chosen based on the area of emphasis and must be approved by the advisory committee and the Graduate Program Director. Electives must be 700 level and above, or any course approved by the Graduate School for Graduate Credit.

## MS Degree, Pharmaceutical Outcomes Sciences Concentration

All students must successfully complete at least 30 hours of graduate course work. All students must submit a thesis based upon original research, meeting all requirements of The Graduate School prior to award of the degree. No more than six hours of credit for PHAR 799 will be allowed for thesis research and writing. Further degree requirements are listed below.

| Course                    | Title   | Credits   |
|---------------------------|---|-----------|
| <b>Required Courses:</b>  |   |           |
| PHAR 711A                 | Seminar in Pharmaceutical Outcomes Research                     | 1         |
| PHAR 711B                 | Seminar in Pharmaceutical Outcomes Research                     | 1         |
| PHAR 740                  | Socio-Economics of Pharmacy Practice                            | 3         |
| PHAR 742                  | Research Methods in Pharmaceutical and Health Outcomes Sciences | 3         |
| PHAR 748                  | Principles of Pharmacoeconomics                                 | 3         |
| ECON 720                  | Managerial Economics  | 3         |
| PHAR 750                  | Introduction to Pharmacoepidemiology                            | 2         |
| PHAR 749                  | Introduction to Implementation Science                          | 2         |
| BIOS 701                  | Concepts and Methods of Biostatistics                           | 3         |
| BIOS 757                  | Intermediate Biostatistics                                      | 3         |
| PHAR 799                  | Thesis Preparation  | 6         |
| <b>Total Credit Hours</b> |   | <b>30</b> |

Note: Depending on the student's needs, additional courses may be required as identified and approved by the major advisor and Graduate Program Director in consultation with the student.