Master of Science in Pharmacogenomics

Overview

A 41 credit Master of Science in Pharmacogenomics ("MSPGx") degree is being offered by the Department of Pharmaceutical and Administrative Sciences in the College of Pharmacy and Health Sciences. This degree program can be completed in as few as three full-time semesters (fall, spring, summer). With an MSPGx degree from WNE, you will be ready to make the most of emerging opportunities from basic or industrial research to clinical implementation through a well-rounded program that aligns with your personal career goals.

Pharmacogenomics is a fast-growing field that helps medical practitioners prescribe personalized treatment plans to patients based on how they may respond to medications due to their DNA sequence. Pharmacogenomics supports personalized or precision medicine, which explores a patient's genetics, environment, and lifestyle as a way to design a treatment plan that will best suit the patient. The goal of this modern approach to medication therapy is to limit adverse effects, while optimizing response and beneficial outcomes. The design of the WNE Master of Science in Pharmacogenomics has purposely integrated all major aspects of this field, from basic genetics to clinical implementation.

Program Outcomes

Students will be expected to fulfill the following primary goals and objectives prior to graduation, which will demonstrate competency in core knowledge areas and relevant skill sets:

1. To comprehend and have a thorough understanding of fundamental biological systems, processes, and core principles that are critical to proficiency in the field of pharmacogenomics, including knowledge of basic cell biology, biochemistry, genetics, and other biological systems.

2. To comprehend and have a thorough understanding of pharmacogenomics and other areas critical to developing proficiency in this field, including pathophysiology, pharmacology, healthcare outcomes, and medical genetics.

3. To gain an understanding and proficiency in basic pharmaceutical and molecular genetic techniques.

4. To achieve proficiency in understanding and applying biologically relevant statistical analysis to research methodology, and the interpretation and analysis of data from genetic sequencing.

5. To be abreast of current scientific advances in the fields of pharmaceutical sciences and pharmacogenomics.

6. To achieve proficiency in skills such as hypothesis development and experimental design.

7. To acquire skills needed for the implementation of pharmacogenomics in a clinical setting.

8. To develop proficiency in oral and written communication related to dissemination of pharmacogenomics concepts and interprofessional collaboration.

MSPGx Admissions Requirements

Applications to the MSPGx program must be submitted via PharmGrad.org.

Application Requirements:

Bachelor's degree: A bachelor's degree from a regionally accredited college or university.

Preferred Prerequisites: A previous genetics course.

Minimum GPA: Undergraduate GPA of at least 2.7 or foreign equivalent.

Transcripts: Transcripts from all colleges attended must be submitted to PharmGrad. Students already enrolled at WNE must request their WNE transcript be submitted to PharmGrad to complete their application.

Recommendations: A minimum of two evaluator names must be submitted within your PharmGrad application; one recommendation must be from a professor.

A current résumé or CV must be uploaded to the Documents section within PharmGrad.

English-language test scores are required for all applicants who are non-native English speakers who have resided in a country, where English is the primary language, for less than 10 years, UNLESS the applicant has earned or is degree pending (will have earned by anticipated matriculation date) a bachelor's degree or graduate degree following three or more years of campus-based post-secondary instruction in the United States. Applicants can use any of the following standardized tests to meet our English language requirement:

- TOEFL—79 IBT
- IELTS—6.5
- PTE Academic—58
- STEP Eiken—2A
- iTEP—4
- Duolingo—110 DET

List of countries in which English language testing would be waived because it is the primary language: Antigua and Barbuda, Australia, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Ireland, Jamaica, New Zealand, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, and the United Kingdom

Qualified candidates may be invited to participate in an interview and complete a writing sample.

Total Credit Hours: 41

Degree Requirements

A total of 41 credits is required for graduation.

Course Sequence

First Year - Fall Semester

PHAR 513	Biochemistry	3 cr.
PHAR 516	Pharmacy Ethics	3 cr.
PHAR 611	Principles of Pharmacology	3 cr.
PHRSC 510	Seminar & Journal Club 1	1 cr.
PHRSC 527	Data Analysis & Biostatistics	3 cr.
PHRSC 551	Introduction to Genetics and Genetic Counseling	3 cr.
		Subtotal: 16

First Year - Spring Semester

PHAR 522	Pathophysiology	3 cr.
PHAR 523	Basic Principles of Genetics & Genomics	2 cr.
PHAR 526	Pharmacy Outcomes	2 cr.
PHRSC 520	Seminar & Journal Club 2	1 cr.
PHRSC 526	Analytical Techniques Lab	1 cr.
PHRSC 552	Advanced Genetics and Genomics	1 cr.
PHRSC 553	Genetic Data Analysis - Bioinformatics	3 cr.
		Subtotal: 13

First Year - Summer Semester

PHRSC 554	Applied Pharmacogenomics Experience	6 cr.
PHRSC 555	Clinical Pharmacogenomics Experience	6 cr.
		Subtotal: 12

Subtotal: 41

Total Credit Hours: 41
Degree completion requirements:

1) All courses passed (“C” or better), with no more than two courses with a grade of “C” or “C+’” and

2) Attain an overall grade point average of 3.0 or higher.