Accelerated Dual Degree BS in Biology/MSPGx

The College of Arts and Sciences and the College of Pharmacy and Health Sciences at Western New England University have collaborated to offer a program unique to Western Massachusetts for those students interested in attaining a Bachelor of Science in Biology and furthering their career with a Master of Science in Pharmacogenomics (MSPGx) in person, or through the hybrid pathway option (MSPGx-HP). This is a dual degree program, where students completing the requirements for each program will receive two separate degrees.

Accordingly, students can earn both the applicable BS degree and the MSPGx(-HP) degree within 5.3 years (i.e., 5 years and 1 summer semester) of entry as an undergraduate. Students admitted by WNE Admissions as undergraduates are only admitted into the BS degree portion of the program. Transition into the MSPGx program is not automatic, nor is acceptance into the MSPGx program guaranteed, but requires application and acceptance into the MSPGx program.

Students in good standing in the Biology major, whom are on track to complete the bulk of the required (not elective) courses of their major within three years (including general university and college requirements), are eligible to apply for admission to the MSPGx degree program during their junior year after December 1. Candidates must successfully submit their application materials and meet with the program coordinator for admission consideration to the MSPGx program.

After successfully completing the fourth year of undergraduate coursework students will be awarded a Bachelor of Science degree in Biology, assuming all degree requirements have been met (including the 30 hours of 300-level or above credit requirement and the 120 minimum credit rule). After completing the summer semester of the MSPGx program, assuming all the degree requirements have been met (38 credits), students will be awarded the Master of Science in Pharmacogenomics.

There will be cross-credits between the two programs, i.e., courses for which credit will apply to the completion of both degrees. In the fourth year of undergraduate coursework, students admitted to the MSPGx program will take up to four 2-3 credit MSPGx courses (one or two in the fall and one or two in the spring), which can potentially fulfill BIO or GEN elective requirements. Up to 11 credits of MSPGx courses (with some exceptions) will fulfill course requirements in the BS degree.

For the BS in Biology, PHRSC 529 (Responsible Conduct in Research) and PHRSC 551 (Introduction to Genetics and Genetic Counseling) can fulfill GEN XXX (General Elective) requirements. The courses PHAR 522 (Pathophysiology) and PHAR 523 (Medical Genetics and Pharmacogenomics) can fulfill BIO or GEN elective requirements, but only if the student did not already take a similarly-titled course as part of their undergraduate degree program. If the student already took such a course, the graduate course credits cannot count towards the undergraduate degree. Thus, when students begin the MSPGx program coursework, they will already have completed two to four of the required MSPGx courses. In addition, alumni enrolled in a graduate program can take two free 3 credit courses, all together saving dual degree students time and costs.

Students in the Biology major that either (a) do not meet the MSPGx program admission requirements during their junior year, or (b) elect not to apply for admission to the MSPGx program at that time, remain eligible to apply for admission as part of the general applicant pool following four years of University study and completion of a bachelor's degree.

Degree Requirements

Biology Curriculum Years – 120 Total Credit hours over the First 4 Years

Meet with your faculty advisor to select the proper order and courses to take in the first 3 years, so as to incorporate some or all of the below listed MSPGx courses in the 4th year. While not required, it is recommended that students considering completing the Biology-MSPGx dual degree program take at least Calculus I and Anatomy & Physiology in addition to other required Biology major course requirements. Students will also meet with the MSPGx Program Coordinator, prior to admission to the dual degree, as well as to decide which of the below courses they will take as a 4th year undergraduate.

Fall – PHRSC 529	Responsible Conduct of Research	3 cr.
Fall – PHRSC 551	Introduction to Genetics and Genetic Counseling	3 cr.
Spring - PHAR 522	Pathophysiology	3 cr.
Spring – PHAR 523	Medical Genetics and Pharmacogenomics	2 cr.

These courses may be offered as in person and/or virtual sections, either section can be selected depending on preference and undergraduate coursework schedules.

Suggested Course Sequence

Freshman Year BS Biology - Fall Semester

BIO 107	General Biology I	3 cr.
BIO 117	General Biology Laboratory I	1 cr.
CHEM 105	General Chemistry I	4 cr.
ENGL 132	English Composition I	3 cr.
MATH 109	Precalculus Mathematics	3 cr.
-	or	-
MATH 123	Calculus I for Management, Life, and Social Sciences	3 cr.
BLUE 101	BLUE Course	1 cr.

Subtotal: 15 cr.

Freshman Year BS Biology - Spring Semester

BIO 108	General Biology II	3 cr.
BIO 118	General Biology Laboratory II	1 cr.
CHEM 106	General Chemistry II	4 cr.
ENGL 133	English Composition II	3 cr.
MATH 121	Introductory Probability and Statistics	3 cr.
GBD XXX	Golden Bear Discovery / GOLD	3 cr.

Subtotal: 17 cr.

Sophomore Year BS Biology - Fall Semester

BIO 213	Ecology	3 cr.
CHEM 209	Organic Chemistry I	3 cr.
CHEM 219	Organic Chemistry Laboratory I	1 cr.
GBD XXX	Golden Bear Discovery	3 cr.
GBD XXX	Golden Bear Discovery	3 cr.

Subtotal: 13 cr.

Sophomore Year BS Biology - Spring Semester

BIO 201	Plant Biology	4 cr.
CHEM 210	Organic Chemistry II	3 cr.
CHEM 220	Organic Chemistry Laboratory II	1 cr.
GBD XXX	Golden Bear Discovery	3 cr.
WIC 2XX	Writing Intensive Course	3 cr.

Subtotal: 14 cr.

Junior Year BS Biology - Fall Semester

BIO 2XX/4XX	BIO Elective	3 cr.
GBD XXX	Golden Bear Discovery	3 cr.
GEN 3XX	General Elective	3 cr.
GEN 3XX	General Elective	3 cr.
PHYS 123	Physics of the Life Sciences I	4 cr.
-	or	-
PHYS 110	Physics of the Human Body	3 cr.
-	or	-
PHYS 101	Elements of Physics	3 cr.

Subtotal: 15-16 cr.

Junior Year BS Biology - Spring Semester

PHYS 124	Physics of the Life Sciences II	4 cr.
-	or	-
PHYS 15x	PHYS 15X Elective	3 cr.
GEN XXX	General Elective	3 cr.
WIC 3XX	Writing Intensive Course	3 cr.
GEN 3XX	Upper Level General Elective	3 cr.
BIO 310	Cell Biology	4 cr.

Subtotal: 16-17 cr.

Senior Year BS Biology - Fall Semester

BIO 306	Genetics	4 cr.
GEN 3XX	General Elective	3 cr.
GEN 3XX	Upper Level General Elective	3 cr.
GEN XXX	General Elective	3 cr.
GEN XXX	General Elective	3 cr.

Subtotal: 16 cr.

Recommended MSPGx Electives:

PHRSC 529	*Responsible Conduct of Research*	*3 cr.*
PHRSC 551	*Introduction to Genetics and Genetic Counseling*	*3 cr.*

Senior Year BS Biology - Spring Semester

BIO 455	Evolution	3 cr.
BIO 2XX/4XX	BIO Elective	4 cr.
BIO 470	Seminar in Biology	1 cr.
GEN 3XX	Upper Level General Elective	3 cr.
GEN XXX	General Elective	3 cr.

Subtotal: 14 cr.

Recommended MSPGx Electives:

PHAR 522	*Pathophysiology*	*3 cr.*
PHAR 523	*Medical Genetics and Pharmacogenomics*	*2 cr.*

MSPGx Curriculum Years – 27-33 Total Credit Hours over the Last 1.3 Years

MSPGx - Fall Semester

PHAR 513	Biochemistry	3 cr.
PHRSC 529	*Responsible Conduct of Research*	*3 cr.*
PHRSC 515	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.*
PHRSC 526	Analytical Techniques Lab	1 cr.

Italicized courses are those that may have been taken as a 4th year undergraduate.

Subtotal: 11-14 cr.

MSPGx - Spring Semester

PHAR 522	*Pathophysiology*	*3 cr.*
PHAR 526	Pharmacy Outcomes	2 cr.
PHAR 523	*Medical Genetics and Pharmacogenomics*	*2 cr.*
PHRSC 552	Applied Genetics, Pharmacokinetics, and PGx	2cı
PHRSC 560	Genetic Research and Bioinformatics	3 cr.
PHRSC 557	Mechanisms of Drug Action	3 cr.

Italicized courses are those that may have been taken as a 4th year undergraduate.

Subtotal: 10-13 cr.

MSPGx - Summer Semester

PHRSC 558	Pharmacogenomics Laboratory Experience	3 cr.	Two full time 3-week blocks offered during 1st summer session*
PHRSC 559	Pharmacogenomics Clinical Experience	3 cr.	Two full time 3-week blocks offered during 2nd summer session*

* Blocks will be filled on a first come first served basis.
Subtotal: 6 cr.

MSPGx 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.

Total Credit Hours: 38