

PHARMACEUTICAL BIOCHEMISTRY (M.S.)

The objective of this program is to provide students with the opportunity to obtain a Master of Science Degree in Pharmaceutical Biochemistry at Montclair State University. Graduates from this program will be prepared for careers in applied research or product development in the pharmaceutical industry and for work in management, inspection, sales and service. Specifically, these graduates will have the requisite skills in biochemistry, drug design and pharmacology to set them on a career path in the pharmaceutical industry. This program is uniquely poised to meet these objectives by providing a core curriculum which closely parallels the drug discovery process followed within the pharmaceutical industry. The core curriculum provides training in the biochemical aspects of drug discovery, drug screening and medicinal chemistry technologies, and pharmacological evaluation of new drug candidates.

For details about this program, including program description, admission requirements, and contact information, click here (<https://www.montclair.edu/graduate/programs-of-study/pharmaceutical-biochemistry-ms/>).

Program Requirements

| Code | Title | Credits |
|--|--|-----------|
| Core Courses | | |
| CHEM 570 | Advanced Biochemistry | 3 |
| CHEM 575 | Enzyme Kinetics and Mechanisms | 3 |
| CHEM 579 | Biomolecular Assay Development | 3 |
| CHEM 582 | Biochemical Pharmacology | 3 |
| Research Options | | |
| Select either the Graduate Literature Search or the Research & Thesis 3-9 option: | | |
| <i>Graduate Literature Search</i> | | |
| CHEM 598 | Graduate Literature Search (Complete two times for a total of 2 credits) | |
| CHEM 599 | Graduate Seminar | |
| <i>Research & Thesis</i> | | |
| CHEM 595 | Graduate Research | |
| CHEM 698 | Master's Thesis | |
| Submit the completed Thesis original and one copy to the Graduate Office. See Thesis Guidelines for details. | | |
| Culminating Experience | | |
| Make a seminar presentation in conjunction with Research option. Graduate School must be notified when complete. | | |
| Electives | | |
| Complete 15 credits of electives if choosing the Graduate Literature Search option. Complete 9 credits of electives if choosing the Thesis option. See list below. No more than 6 credits in Biology may be taken. | | |
| Total Credits | | 30 |

Electives

| Code | Title | Credits |
|----------|--|---------|
| BIOL 505 | Experimental Cell Culture | 3 |
| BIOL 512 | Special Topics in Modern Genetics | 3 |
| BIOL 547 | Molecular Biology I | 3 |
| BIOL 548 | Molecular Biology II | 4 |
| BIOL 594 | Signal Transduction | 3 |
| BIOL 598 | Selected Techniques in Molecular Biology | 1.5 |
| CHEM 525 | Bioinorganic Chemistry | 3 |
| CHEM 530 | Advanced Organic Chemistry | 3 |
| CHEM 538 | Drug Design in Medicinal Chemistry | 3 |
| CHEM 560 | Advanced Analytical Chemistry | 3 |
| CHEM 574 | Protein Structure | 3 |
| CHEM 577 | Nucleic Acid Biochemistry | 3 |
| CHEM 578 | Biochemistry Laboratory Techniques | 3 |
| CHEM 595 | Graduate Research | 1-6 |

Research and Thesis Option - 2 Year Roadmap

| First Year | | | |
|-------------------------|----------|--------------------------|----------|
| Fall | Credits | Spring | Credits |
| Core Course | | 3 Core Course | 3 |
| Elective Course | | 3 Elective course | 3 |
| CHEM 595 | | 2 CHEM 595 | 2 |
| | 8 | | 8 |
| Second Year | | | |
| Fall | Credits | Spring | Credits |
| Core Course | | 3 Elective Course | 3 |
| Elective Course | | 3 CHEM 698 | 3 |
| CHEM 595 | | 2 Culminating Experience | |
| | 8 | | 6 |
| Total Credits 30 | | | |

Research and Thesis Option - 15 Month Roadmap

| First Year | | | |
|---|---------|---|---------|
| Fall | Credits | Spring | Credits |
| Core Course (Complete in the Summer term) | | 3 Elective Course (Complete in the Winter term) | 3 |
| CHEM 595 (Complete in the Summer term) | | 2 Core Course | 3 |
| Core Course | | 3 Elective Course | 3 |
| Elective Course | | 3 CHEM 595 | 2 |

| | | | |
|------------------|----|------------------------|---------|
| CHEM 595 | 2 | | |
| | 13 | 11 | |
| Second Year | | | |
| | | Summer | Credits |
| | | Elective Course | 3 |
| | | CHEM 698 | 3 |
| | | Culminating Experience | |
| | | | 6 |
| Total Credits 30 | | | |

Literature Search Option - 2 Year Roadmap

| | | | |
|------------------|---------|--------------------------|---------|
| First Year | | | |
| Fall | Credits | Spring | Credits |
| Core Course | | 3 Core Course | 3 |
| Elective Course | | 3 Elective Course | 3 |
| Elective Course | | 3 Elective Course | 3 |
| | | CHEM 598 | 1 |
| | 9 | | 10 |
| Second Year | | | |
| Fall | Credits | Spring | Credits |
| Core Course | | 3 Elective Course | 3 |
| Elective Course | | 3 CHEM 599 | 1 |
| CHEM 598 | | 1 Culminating Experience | |
| | 7 | | 4 |
| Total Credits 30 | | | |

Literature Search Option - 15 Month Roadmap

| | | | |
|---|---------|---|---------|
| First Year | | | |
| Fall | Credits | Spring | Credits |
| Elective Course (Complete in the Summer term) | 3 | Elective Course (Complete in the Winter term) | 3 |
| Core Course | 3 | CHEM 598 (Complete in the Winter term) | 1 |
| Elective Course | 3 | Core Course | 3 |
| Elective Course | 3 | Elective Course | 3 |
| | | Elective Course | 3 |
| | | CHEM 598 | 1 |
| | 12 | | 14 |

| | | | |
|------------------|--|------------------------|---------|
| Second Year | | Summer | Credits |
| | | Core Course | 3 |
| | | CHEM 599 | 1 |
| | | Culminating Experience | |
| | | | 4 |
| Total Credits 30 | | | |