Degree requirements are at least 33 credits of course work, an internship and passing an exit exam. Credits are selected from an approved menu of courses: minimum 18 credits from Conceptual Courses options, minimum 8 credits in Professional Coursework and minimum 7 credits in professional master’s cohort courses (communication skills, Frontiers seminars, business practices, internship). Courses are periodically modified to reflect new offerings or changing scientific emphasis.

### A. Conceptual Courses (minimum 18 credits selected from the following)

- MCB 4026 Advanced Biochemistry Laboratory (4 credits) S
- MCB 4211 Basic Immunology (3 credits) F
- MCB 5003 Biophysical Chemistry (3 credits) S
- MCB 5008 Techniques of Biophysical Chemistry (3 credits) S
- MCB 5012 Foundations of Structural Biology (3 credits) F
- MCB 5014 Structure & Dynamics of Macromolecular Complexes (3 credits) F
- MCB 5200 Cell Biology of the Mammalian Secretory Apparatus (3 credits) S
- MCB 5217 Biosynthesis of Nucleic Acids (3 credits) F
- MCB 5240 Virology (3 credits)
- MCB 5250 Techniques in Cellular Analysis (3 credits) F
- MCB 5255 Cellular and Molecular Immunology (2 credits) S
- MCB 5280 Advanced Cell Biology (3 credits) S
- MCB 5299 Current Topics in Cell Biology (1 credit) F, S
- MCB 5454 Molecular Aspects of Genetics (2 credits) S
- MCB 5471 Current Topics in Molecular Evolution and Systemics (1 credit) F, S
- MCB 5681 Pathogenic Microbiology (3 credits) F
- MCB 5895 Independent Study (1 credit) F, S
- MCB 5896-012 Fundamentals of Light Microscopy (3 credit) S
- PHRX 3002 Bioorganic Chemistry (3 credits)
- PHAR 5240 Drug Discovery and Development (2 credits) S
- PHAR 5471 Advanced Pharmacology I: Basic Principles (3 credits) F
- PHAR 5472 Advanced Pharmacology II: Drug Disposition (3 credits) S
- PHAR 6455 Advanced Toxicology (4 credits)
- PNB 3260 Stem Cell Biology (3 credits) S
- Other: ___________________________ (Requires prior approval from Applied Biochemistry and Cell Biology program director)

### B. Practical Coursework (minimum 8 credits selected from the following)

- MCB 5896-052 Introduction to Flow Cytometry (1 credit) S
- MCB 5896-065 Protein Purification and Expression (1 credit) S
- MCB 5896-066 Molecular Graphics (1 credit) S
- MCB 5427 Laboratory Techniques in Functional Genomics (1 credit, D) F, S, Su, W
- MCB 5430 Analysis of Eukaryotic Functional Genomic Data (3 credits) F, S
- MCB 5670 Theory and Practice of Laboratory Techniques in Microbiology (1 credit, D) Su, W
- MCB 5671 Advanced Theory and Practice of Laboratory Techniques in Microbiology (2 credits, D) Su, W
- MCB 5672 Applied Bioinformatics (1 credit) F, S
- MCB 6897 Research (1-6 credits) F, S, Su
- Other: ___________________________ (Requires prior approval from Applied Biochemistry and Cell Biology program director)

### C. Professional Master’s Cohort Courses (minimum 7 credits - must include MCB 5900 (GRAD 5900), MCB 5490 Lab Management and two semesters of MCB 5491 (all four courses required for first year students) and 3 credits of GRAD 5930)

- MCB 5080 Frontiers in Microbiology (1 credit, R) S
- MCB 5490 Industrial Insights (1 credit, D) F, S, Su
- MCB 5491 Professional Development Seminar (1 credit, R) F, S
- MCB 5900 (GRAD 5900 Special Topics in Graduate Education) Professional Writing & Communication Skills (1 credit) F, S
- GRAD 5910 Responsible Conduct in Research: Genomics and Life Sciences (1 credit) S
- GRAD 5930 Full-Time Directed Studies (Master’s Level) - Internship (3 credits, Internship) F, S, Su
- Other: ___________________________ (Requires prior approval from Applied Biochemistry and Cell Biology program director)

R = May be repeated for credit  
D = Different sections may be taken for repeat credit  
Note: Only 6 credits total of 3000 and 4000 level courses may be applied to the graduate degree.