

**Professional Master's Program in Applied Biochemistry and Cell Biology
Degree Requirements Checklist**

College of Liberal Arts and Sciences

Last revised: 4/22/20

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 Practical 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, Su
- 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.