4/27/17

2-Yr MS Biotechnology Science Pathways to Graduation (34 credits)

Prerequisite Degree Requirements (All Tracks)

Prerequisite Course Requirements
Biochemistry (All Tracks)
Cell Biology (All Tracks)
Molecular Biology (All Tracks)
Organic Chemistry 1 & 2 (All Tracks)
Accounting (Life Sciences Business Management Track Only)
Intro to Finance (Life Sciences Business Management Track Only)
CPS 2232 Data Structures or equivalent (Bioinformatics Track Only);
CPS 1231 JAVA-1 **– OR –** CPS 2231 JAVA-2 **–OR–** STME 1605 Intro to Programming **–OR–** equivalent C, C++, Java or Python programming course (Bioinformatics Track Only)

Required Base Curriculum (All Tracks)

Required Core Courses (13 credits)	***Credits***
STME 5010 Molecular & Cellular Biology in Biotechnology (FA)	3
STME 5300 Advanced Cell Biology & Biotechnology (SP)	3
STME 5020 Ethics in Biotechnology (FA)	1
STME 5103 Scientific Writing & Presentation (FA possibly SP also)	3
STME 5510 Biostatistics & Computational Analysis **–OR–** MATH 5505 Applied Statistical Analysis (FA)	3

Degree Concentrations

1. Advanced Biotechnology & Drug Discovery Track Electives (15 credits)	**Credits**
Required Core Electives:	
STME 5600 Molecular Pharmacology **–OR–** STME 5625 Medicinal Chemistry (SP)	3
STME 5140 Molecular & Cellular Techniques (SP)	3
STME 5170 Advanced Molecular & Cellular Techniques (FA)	3
Flexible Electives (Choose 2):	
STME 5320 Applied Human Immunology (FA) **–OR–** STME 5830 Pharmaceutical Innovation & Drug Development	3
STME 5310 Molecular Biology of Cancer (SP) **–OR–** STME 5260 Advanced Systems Biology (SP)	3
STME 5600 Molecular Pharmacology **–OR–** STME 5625 Medicinal Chemistry (SP)	3
STME 5650 Translational Science & Medicine **–OR–** STME 5810 Mass Spectrometry in Drug Discovery (FA)	3
Thesis Research & Writing (6 credits)	
STME 5410-5415: Independent Graduate Research or External Internship	6

2. Analytical Chemistry Track Electives (15 credits)	Credits
Required Core Electives:	
STME 5615 Chemical Instrumentation and Analytical Techniques (SP)	3
STME 5810 Mass Spectrometry in Drug Discovery (FA)	3
STME 5260 Advanced Systems Biology (SP)	3
Flexible Electives (Choose 2):	
STME 5140 Molecular & Cellular Techniques (SP) **–OR–** STME 5170 Advanced Molecular & Cellular Techniques (FA)	3
STME 5650 Translational Science & Medicine **–OR–** STME 5830 Pharmaceutical Innovation & Drug Development	3
STME 5625 Medicinal Chemistry (SP) **–OR–** STME 5600 Molecular Pharmacology	3
Thesis Research & Writing (6 credits)	
STME 5410-5415: Independent Graduate Research or External Internship	6

3. Bioinformatics Track Electives (15 credits)	Credits
Required Core Electives:	
STME 5120 Introduction to Bioinformatics (FA or SP?)	3
STME 5260 Advanced Systems Biology (FA or SP?)	3
CPS 5920 Database Systems (FA)	3
Flexible Electives (Choose 2):	
CPS 5921 Knowledge Discovery & Data Mining (FA)	3
STME 5140 Molecular & Cellular Techniques (SP) **–OR–** STME 5170 Advanced Molecular & Cellular Techniques (FA) – highly recommended	3
CPS 5965 High Performance Computing (FA) **–OR–** CPS 5440 Advanced Analysis of Algorithms (FA)	3
Thesis Research & Writing (6 credits)	
STME 5410-5415: Independent Graduate Research or External Internship	6

4. Life Sciences Business Management Track Electives (15 credits)	Credits
Required Core Electives:	
MGS 5010 – Strategic Management (SP)	3
MKT 5400 – Marketing Management (FA or SP?)	3
GMBA 5680 – Management Leadership Global Environment (FA)	3
Flexible Electives (Choose 2):	
STME 5310 Molecular Biology of Cancer (SP) **–OR–** STME 5260 Advanced Systems Biology (SP)	3
STME 5320 Applied Human Immunology (FA) **–OR–** STME 5650 Translational Science & Medicine	3
STME 5600 Molecular Pharmacology **–OR–** STME 5830 Pharmaceutical Innovation & Drug Develop	3
Thesis Research & Writing (6 credits)	
STME 5410-5415 Business Case Study in Pharma/Biotech **–OR–** ILSE internship	6

2 Year MS in Biotechnology Pathway to Graduation

Total Semester Hours: 34

Year 1: Fall Semester		Year 1: Spring Semester	
STME 5103 Scientific Writing & Presentation	3	STME 5020 Ethics in Biotechnology (FA)	1
STME 5510 Biostatistics & Computational Analysis **–OR–** MATH 5505 Applied Statistical Analysis	3	STME 5300 Advanced Cell Biology & Biotechnology	3
STME 5010 Molecular Cell Biology	3	Choose 2 Track Specific Electives	6
	9		10
Year 2: Fall Semester		**Year 2: Spring Semester**	
Choose 2 Track Specific Electives	3	Choose 1 Track Specific Elective	3
Biotech Intern/Externship **–OR–** STME 5XXX MS Thesis	3	Biotech Intern/Externship –OR– STME 5XXX MS Thesis	3
	9		6