

(36105) B.S. IN SCIENCE & TECHNOLOGY (Molecular Biology Option)

120 S.H.

Minimum GPA Required for Declaration: N/A

Minimum GPA Required for Major: 2.75

Overall Minimum GPA Required for Graduation: 3.0

EFFECTIVE DATE: FALL 2022

GENERAL EDUCATION: 34 Semester Hours (S.H.)			
Foundation Requirements^{1,2}: 14 S.H.			
GE 1000	Transition to Kean ³ or GE 3000 Transfer Transition ³	1	
ENG 1030	College Composition ¹	3	
STME 2000	Math. & Comp. Methods of Science I ⁴ &	3	
STME 2099	Math. & Comp. Methods of Science I ⁴ Lab	1	
COMM 1402	Speech Communication As Critical Citizen ¹	3	
GE 2024	Research & Technology	3	
Disciplinary & Interdisciplinary Distribution Requirements²: 20 S.H.			
Humanities: 6 S.H.			
*ENG 2403	World Literature	3	
<i>Select ONE course from below - see GE Distribution Course List</i>			
	Fine Arts/Art History	3	
	Philosophy or Religion	3	
	Foreign Languages (must take I & II for credit)	3	
	Music or Theater	3	
	Interdisciplinary	3	
Social Sciences: 6 S.H.			
*HIST 1062	Worlds of History	3	
<i>Select ONE course from below - see GE Distribution Course List</i>			
	Psychology	3	
	Economics or ES1010 (World Geography)	3	
	Political Science	3	
	Sociology or Anthropology	3	
	Interdisciplinary	3	
Science and Mathematics: 8 S.H.			
STME 2100	Math. & Comp. Methods of Science II &	3	
STME 2199	Math. & Comp. Methods of Science II Lab	1	
STME 1000	Chemical Systems I &	3	
STME 1099	Chemical Systems I Lab	1	
ADDITIONAL REQUIRED COURSES¹: 13 S.H.			
STME 1700	Living Systems I &	3	
STME 1799	Living Systems I Lab	1	
STME 2700	Physical Systems I &	3	
STME 2799	Physical Systems I Lab	1	
STME 2300	Probabilistic Methods in Science &	3	
STME 2399	Probabilistic Methods in Science Lab	1	
STME 1903	Research Methods-RFI	1	

ACADEMIC MAJOR⁵: 71 S.H.			
Program Core Requirements⁵: 18 S.H.			
STME 1100	Chemical Systems II &	3	
STME 1199	Chemical Systems II Lab	1	
STME 1800	Living Systems II &	3	
STME 1899	Living Systems II Lab	1	
STME 2681	Organic Chemistry Honors Lecture I	3	
STME 2683	Organic Chemistry Honors Lab I	2	
STME 2682	Organic Chemistry Honors Lecture II	3	
STME 2684	Organic Chemistry Honors Lab II	2	
Program Requirements All Tracks⁵: 17-21 S.H.			
BIO 3709	Genetics	4	
STME 3100	Biochemistry Honors I &	3	
STME 3199	Biochemistry Honors I Lab	1	
STME 5020	Ethics in Biotechnology	1	
STME 5103	Scientific Writing and Presentation	3	
STME 1500	Intro to Programming &	3	
STME 1599	Intro to Programming Lab	1	
STME 2903	Research Experience-RFI ⁷ &	2	
STME 3903	Advanced Research Experience-RFI ⁷	3	
	OR		
STME 3171-73	STEM Internship ^{6,8}	3	
	OR		
STME 3610	Current Issues ⁶	1	
Major Track Electives⁵: 29-33 S.H.			
<i>See page 2 for specific courses by track</i>			
Track 1	Advanced Biotechnology & Drug Discovery	29-33	
Track 2	Analytical Chemistry & Instrumental Analysis	29-33	
Track 3	Bioinformatic & Genomic Sciences	29-33	
Track 4	Life Sciences Business Management	29-33	
**Major Capstone Course⁵: 3 S.H.			
STME 4610	Science & Technology Seminar (WE)	3	
FREE ELECTIVES: 2 S.H.			
<i>(Select w/advisement, at least 50% must be at 3000-4000 level)</i>			

Special Notes:	
<p>All pre-requisites for major courses must be passed with a grade of C or better.</p> <p>* GE Distribution course required of all students ** Course required by Major</p> <p>¹ Foundation Requirements & Additional Required Courses require a grade of C or better, except ENG 1030 and COMM 1402 require B- or better.</p> <p>² See prerequisites & equivalencies (on page 3).</p> <p>³ University Requirement for Graduation for all undergraduate students that must be satisfied in one of two ways: Complete GE 1000 (all freshmen & transfers entering with 0-29 credits) OR complete GE 3000 (transfers entering with 30 credits or more).</p> <p>⁴ Prerequisite of qualifying test score or the equivalent of MATH 1054.</p>	<p>⁵ A minimum major GPA of 2.75 and minimum grade of C is required in all major courses, except major capstone requires a grade of B- or better.</p> <p>⁶ Non-Research First Initiative (RFI) students only.</p> <p>⁷ Required for RFI students – must complete with RFI sponsor faculty.</p> <p>⁸ At a minimum, 3 total credits is required for students choosing to do a STEM Internship. Students may take any combination of STME 3171, 3172, 3173 (1, 2 or 3 credits) per semester that they choose to do an internship.</p> <p>⁹ May take STME 5625 in place of CHEM 4190 but it will not count towards the BS degree; An additional elective at the undergraduate level should be taken since STME 5625 would count towards the graduate year.</p>

TRACK SPECIFIC REQUIREMENTS: ADVANCED BIOTECHNOLOGY & DRUG DISCOVERY			
MAJOR TRACK ELECTIVES⁵: 29 - 33 S.H. (Select a total of 29-33 credits of major elective courses from the list below with advisement)			
CHEM 4190 ⁹	Medicinal Chemistry	3	
BIO 4316	Immunology	3	
BIO 4316L	Immunology Lab	1	
BIO 3820	Basic Tissue Culture	4	
BIO 4700	Molecular Genetics	4	
BIO 3315	Microbiology	3	
BIO 3315L	Microbiology Lab	1	
BIO 3403	Anatomy & Physiology	4	
BIO 3406	Neuroscience	4	
BIO 4250	Mammalian Endocrinology	4	
BIO 4310	Virology	4	
CHEM 4184	Intro to Molecular Modeling & Applications	3	
STME 4901	Independent Research (Biotech)	4-6	
STME 4902	2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence		
STME 4903			
TRACK SPECIFIC REQUIREMENTS: ANALYTICAL CHEMISTRY & INSTRUMENTAL ANALYSIS			
MAJOR TRACK ELECTIVES⁵: 29 - 33 S.H. (Select a total of 29-33 credits of major elective courses from the list below with advisement)			
CHEM 2283	Quantitative Analysis	4	
CHEM 3284	Instrumental Methods of Analysis (WE)	4	
CHEM 4190 ⁹	Medicinal Chemistry	3	
CHEM 4285	Chemical Separation Methods	3	
CHEM 4182	Advanced Organic Preparations	3	
CHEM 4184	Intro to Molecular Modeling & Applications	3	
BIO 3820	Basic Tissue Culture	4	
BIO 4316	Immunology	3	
BIO 4316L	Immunology Lab	1	
BIO 4700	Molecular Genetics	4	
BIO 3315	Microbiology	3	
BIO 3315L	Microbiology Lab	1	
STME 4901	Independent Research (Chemistry)	4-6	
STME 4902	2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence		
STME 4903			

TRACK SPECIFIC REQUIREMENTS: BIOINFORMATIC & GENOMIC SCIENCES			
MAJOR TRACK ELECTIVES⁵: 29 - 33 S.H. (Select a total of 29-33 credits of major elective courses from the list below with advisement)			
BIO 3820	Basic Tissue Culture	4	
BIO 4700	Molecular Genetics	4	
BIO 3315	Microbiology	3	
BIO 3315L	Microbiology Lab	1	
CPS 2231	Computer Organization & Programming	4	
CPS 2232	Data Structures & Algorithmic Analysis	4	
MATH 2110	Discrete Structures	3	
CPS 3500	Programming the World Wide Web	3	
CPS 3740	Database Management Systems	3	
CPS 3351	Information Systems Programming	3	
CPS 3440	Advanced Algorithm Analysis & Complexity	3	
CHEM 4184	Intro to Molecular Modeling & Applications	3	
STME 4901	Independent Research (Bioinformatics)	4-6	
STME 4902	2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence		
STME 4903			
TRACK SPECIFIC REQUIREMENTS: LIFE SCIENCES BUSINESS MANAGEMENT			
MAJOR TRACK ELECTIVES⁵: 29 - 33 S.H. (Select a total of 29-33 credits of major elective courses from the list below with advisement)			
MGS 2030	Principles of Management	3	
MKT 2500	Principles of Marketing	3	
MGS 3013	Entrepreneurship		
MGS 3032	Organizational Behavior	3	
MGS 3110	Managerial Decision Modelling	3	
ACCT 2200	Principles of Accounting I	3	
ACCT 2210	Principles of Accounting II	3	
CHEM 4190 ⁹	Medicinal Chemistry	3	
BIO 4316	Immunology	3	
BIO 4316L	Immunology Lab	1	
BIO 3820	Basic Tissue Culture	4	
BIO 4700	Molecular Genetics	4	
BIO 3315	Microbiology	3	
BIO 3315L	Microbiology Lab	1	
STME 4901	Independent Research (Business)	4-6	
STME 4902	2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence		
STME 4903			

Special Notes:	
<p>All pre-requisites for major courses must be passed with a grade of C or better. [*] GE Distribution course required of all students ^{**} Course required by Major ¹ Foundation Requirements & Additional Required Courses require a grade of C or better, except ENG 1030 and COMM 1402 require B- or better. ² See prerequisites & equivalencies (on page 3). ³ University Requirement for Graduation for all undergraduate students that must be satisfied in one of two ways: Complete GE 1000 (all freshmen & transfers entering with 0-29 credits) OR complete GE 3000 (transfers entering with 30 credits or more). ⁴ Prerequisite of qualifying test score or the equivalent of MATH 1054.</p>	<p>⁵ A minimum major GPA of 2.75 and minimum grade of C is required in all major courses, except major/GE capstone requires a grade of B- or better. ⁶ Non-Research First Initiative (RFI) students only. ⁷ Required for RFI students – must complete with RFI sponsor faculty. ⁸ At a minimum, 3 total credits is required for students choosing to do a STEM Internship. Students may take any combination of STME 3171, 3172, 3173 (1, 2 or 3 credits) per semester that they choose to do an internship. ⁹ May take STME 5625 in place of CHEM 4190 but it will not count towards the BS degree; An additional elective at the undergraduate level should be taken since STME 5625 would count towards the graduate year.</p>