

KEAN UNIVERSITY - N.J. CENTER FOR SCIENCE, TECHNOLOGY & MATHEMATICS
(30105) 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 2019

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 Requirements ² : 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 COURSES ¹ : 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 MAJOR ⁵ : 71 S.H.			
Program Core Requirements ⁵ : 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 Tracks ⁵ : 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 ^{8,9}	3	
	OR		
STME 3610	Current Issues ⁶	1	
Major Track Electives ⁵ : 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 Course ⁵ : 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:

All pre-requisites for major courses must be passed with a grade of C or better.
¹ 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.

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.
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.

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 STME 4902 STME 4903	Independent Research (Biotech) 2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence	46	

TRACK SPECIFIC REQUIREMENTS: ANALYTICAL CHEMISTRY & INSTRUMENTAL ANALYSIS			
MAJOR TRACK ELECTIVES⁶: 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 3583	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 STME 4902 STME 4903	Independent Research (Chemistry) 2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence	46	

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 STME 4902 STME 4903	Independent Research (Bioinformatics) 2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence	46	

TRACK SPECIFIC REQUIREMENTS: LIFE SCIENCES BUSINESS MANAGEMENT			
MAJOR TRACK ELECTIVES⁶: 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 STME 4902 STME 4903	Independent Research (Business) 2 semesters of research and a minimum of 4 total credits is required for those completing the RFI sequence	46	

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/GE 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>

GENERAL EDUCATION AND UNIVERSITY REQUIREMENTS

GENERAL EDUCATION INFORMATION AND REQUIREMENTS

Testing and Placement

Incoming freshmen and transfer students may be placed in specific GE Foundations, Developmental or ESL courses as a result of testing prior to registration. Students may be exempt from testing due to SAT scores or prior college work.

Prerequisites and Equivalencies for GE Foundations Courses

GE 1000

Required of all freshmen & transfers entering with 0-29 credits

Prereq: None

Equiv: ID 1001

GE 3000

Required of transfers entering with 30 credits or more

Prereq: 30 credits and ENG 1030

ENG 1030

Prereq: Placement testing or exemption from placement testing

Equiv: ENG 1031/1032, ENG 1033/1034,
ENG 1430, ENG 1620, ENG 1020, ENG 1400

MATH 1000 or 1010 or 1016 or 1030

Prereq: MATH 0901 if required by placement testing

Equiv of MATH 1000: MATH 1001/1002,
MATH 1003/1004, MATH 1051

MATH 1044* or 1054

Prereq: MATH 0901 if required by placement testing and MATH 1000

***MATH 1044 is available as a Foundation option for CBPM students only**

COMM 1402

Prereq: CS 0412 if required by placement testing
ENG 1031/1032 or ENG 1033/1034 if required by placement testing
May be taken concurrently with ENG 1030

Equiv: COMM 1400

GE 2021- 2026 Research and Technology is offered as college-based course

GE 2021 College of BPM

GE 2022 College of EDU

GE 2023 College of CLA

GE 2024 College of NAHS

& NJCSTM & NWGC

GE 2025 SFPA & Michael Graves College

GE 2026 Undecided Majors and other special populations

Prereqs: CS 0412 if required by placement testing
ENG 1030 or equivalent
COMM 1402

Equiv: GE 2020

GE Distribution Courses

Approved GE Distribution Courses

All courses taken under the General Education Disciplinary/Interdisciplinary Distribution requirements must be selected from the Approved General Education Distribution Course List.

These courses are designated as GEHU, GESS, and GESM.

GEHU Humanities

GESS Social Sciences

GESM Science and Mathematics

Required GE Distribution Courses

ENG 2403 is a required Humanities Distribution course with an emphasis on diversity.

Prereq: CS 0412 if required by placement testing; ENG 1030 or equivalent

Equiv: ENG*2203

HIST 1062 is a required Social Sciences Distribution course.

Prereq: None

Foreign Language Credit

The three credits for a foreign language that may satisfy the GE Disciplinary/Interdisciplinary Distribution Requirement are awarded only upon successful completion of the second of two semesters of study at the introductory or intermediate level.

Credit for the first semester may be used as elective credit.

UNIVERSITY REQUIREMENTS

GE 1000/3000 Requirement

All undergraduate students must satisfy this University requirement for graduation by successfully completing one of the following courses at Kean University: GE 1000 Transition to Kean (all freshmen and transfers entering with 0-29 credits) or GE 3000 Transfer Transitions (transfers entering with 30 credits or more).

Writing-Emphasis Requirement

All students are required to complete one "Writing-Emphasis" course. The "W-E" course must be within the major portion of your program. Consult your major program advisor for specific information.