KEAN UNIVERSITY - N.J. CENTER FOR SCIENCE, TECHNOLOGY & MATHEMATICS

(30112) B.S. IN SCIENCE & TECHNOLOGY (Computational Science & Engineering 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 Transtion[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	
Take ONE GE Approved course from one area below			
	Fine Arts or Art History		
	Philosophy or Religion		
	Foreign Languages (must take I & II for credit)		
	Music or Theater		
	Interdisciplinary		
Social Sciences: 6 S.H.			
*HIST 1062	Worlds of History	3	
Take ONE GE Approved course from one area below			
	Psychology		
	Economics or ES1010 (World Geography)		
	Political Science		
	Sociology or Anthropology		
	Interdisciplinary		
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]: 64-65 S.H.			
Program Core Requirements[5]: 28 S.H.			
STME 1500	Intro. Programming In Sci. & Engineering &	3	
STME 1599	Intro. Programming In Sci. & Engineering Lab	1	
STME 2200	Math. & Comp. Methods of Science III &	3	
STME 2299	Math. & Comp. Methods of Science III Lab	1	
CPS 2231	Computer Organization & Programming	4	
CPS 2232	Data Structures & Algorithm Analysis	4	
MATH 2110	Discrete Structures	3	
CPS 3962 CPS 4301	Information Systems Analysis & Design or Software Engineering I (WE)	3	
Select ONE course from below			
CPS 5965	High Performance Computing	3	
STME 5630	Modeling and Simulation of Dynamic Systems	3	
Select ONE course from below			
STME 5710	Applied Partial Differential Equations	3	
STME 5631	Data Analysis and Visualization	3	
Program Track Requirements[5]: 33-34 S.H.			
(Select based on track, see additional sheets)			
	Applied Math Track	34	
	Bioinformatics Track	34	
	Physics Track	33	
**Major Capstone Course[5]: 3 S.H.			
STME 4610	Science & Technology Seminar (WE)	3	
FREE ELECTIVES: 8-9 S.H.			
(Select w/advisement, at least 50% must be at 3000-4000 level)			

Special Notes:

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.
[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.

TRACK SPECIFIC REQUIREMENTS: APPLIED MATH: 34 S.H.

Program Track Requirements[5]: 25-29 S.H.

STME 2800	Physical Systems II &	3	
STME 2899	Physical Systems II Lab	1	
MATH 3225	Computational Methods Linear Algebra II	3	
MATH 3415	Calculus III	4	
MATH 3455	Differential Equations	3	
MATH 3940	Numerical Analysis	3	
STME 4805	Pedagogy of Modeling & Simulation	3	
STME 2903	Research Experience-RFI[7]	3	
STME 3903	Advanced Research Experience-RFI[7]	2	
	OR		
STME 3171-73	STEM Internship[6,8]	3	
	OR		
STME 3610	Current Issues[6]	1	
Select ONE course from below (must take lecture & lab)			
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	

MAJOR ELECTIVES[5]: 5-9 S.H.
(Select major elective courses with advisement)

TRACK SPECIFIC REQUIREMENTS: PHYSICS: 33 S.H.

Program Track Requirements[5]: 29-33 S.H.

STME 2800	Physical Systems II &	3	
STME 2899	Physical Systems II Lab	1	
PHYS 2907	Physics III	4	
PHYS 4592	Modern Physics	4	
PHYS 4593	Landmarks in 20th Century Physics OR PHYS 4901 Independent Research in Physics	3	
MATH 3415	Calculus III	4	
MATH 3455	Differential Equations	3	
MATH 3940	Numerical Analysis	3	
STME 4805	Pedagogy of Modeling & Simulation	3	
STME 2903	Research Experience-RFI[7]	3	
STME 3903	Advanced Research Experience-RFI[7]	2	
	OR		
STME 3171-73	STEM Internship[6,8]	3	
	OR		
STME 3610	Current Issues[6]	1	

MAJOR ELECTIVES[5]: 0-4 S.H.
(Select major elective courses with advisement)

TRACK SPECIFIC REQUIREMENTS: BIOINFORMATICS: 34 S.H.

Program Track Requirements[5]: 30-34 S.H.

STME 1800	Living Systems II &	3	
STME 1899	Living Systems II Lab	1	
STME 1100	Chemical Systems II &	3	
STME 1199	Chemical Systems II Lab	1	
STME 2681	Organic Chemistry Honors Lecture I	3	
STME 2683	Organic Chemistry Honors Lab I	2	
BIO 3709	Genetics	4	
STME 3100	Biochemistry Honors I &	3	
STME 3199	Biochemistry Honors I Lab	1	
BIO 4700	Molecular Genetics	4	
BIO 3315	Microbiology	3	
BIO 3315L	Microbiology Lab	1	
STME 2903	Research Experience-RFI[7]	3	
STME 3903	Advanced Research Experience-RFI[7]	2	
	OR		
STME 3171-73	STEM Internship[6,8]	3	
	OR		
STME 3610	Current Issues[6]	1	

MAJOR ELECTIVES[5]: 0-4 S.H.
(Select major elective courses with advisement)

Special Notes:

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.

[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.

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.