

**KEAN UNIVERSITY - COLLEGE OF NATURAL APPLIED & HEALTH SCIENCES**

**(70301) B.S. IN BIOLOGY, ENVIRONMENTAL BIOLOGY OPTION\_120 S.H.**

Minimum GPA Required for Declaration: 2.5

Minimum GPA Required for Major: 2.5

Overall Minimum GPA Required for Graduation: 2.5

**EFFECTIVE DATE: Fall 2019**

<b>GENERAL EDUCATION 32 Semester Hours (S.H.)</b>		<b>ACADEMIC MAJOR*** 47-51 S.H.</b>	
<b>Foundation Requirements:<sup>1</sup></b>	<b>13 S.H.</b>	<b>Major Required Courses:</b>	<b>28-29S.H.</b>
GE 1000 Transition to Kean –or– GE 3000 Transfer Transitions <sup>2</sup>	1		
ENG 1030 Composition <sup>3</sup>	3	ENV 1000 Introduction To Environmental Science	3
**MATH 1054 Precalculus <sup>4</sup>	3	ENV 2000 Evolution and Biodiversity	4
COMM 1402 Speech Communication	3	ENV 2100 Ecosystem Science	4
GE 2024 Research & Technology	3	ENV 3051 Field Biology: Terrestrial Systems or ENV 4605 Methods in Marine Research	4
<b>Disciplinary &amp; Interdisciplinary Distribution Requirements:<sup>1</sup> 19 S.H.</b>		ENV 3100 Principles of Environmental Soil Science	4
		ENV 3201 Biodiversity Assessment	4
		ENV 4210 Conservation Biology	4
<b>Humanities<sup>6</sup> S.H. (from different areas)</b>		ENV 4961 Independent Study in SESS (1 credit) or ENV 4962 Independent Study in SESS (2 credits)	1-2
*ENG 2403 World Literature	3		
<b>Take one "GE Approved" course from one area below</b>			
Fine Arts/Art History	3	<b>PROGRAM FOCUS-RELATED ELECTIVES 16-19 S.H.</b> To be selected with advisement from approved program list maintained in the School of Environmental and Sustainability Sciences and in consultation with the Program Coordinator. At least 50% must be at the 3000-4000 level. Maximum of 12 S.H. of ENV courses count toward degree.	
Philosophy or Religion	3		
Foreign Languages (Must take I and II for credit)	3		
Music or Theatre	3		
Interdisciplinary	3		
		<b>Major Elective Courses:</b>	<b>16-19 S.H.</b>
<b>Social Sciences 6 S.H. (from different areas)</b>		Optional: ES 1996 Freshman Research	1-2
*HIST 1062 Worlds of History	3	Optional: ES 3171-3173 Internship	1-3
<b>Take one "GE Approved" course from one area below</b>			
Psychology	3		
Economics or ES 1010-World Geography	3		
Political Science	3	<b>**Major Capstone Course**:</b>	<b>3 S.H.</b>
Sociology or Anthropology	3	SUST 4300 Independent Practicum in Sustainability (WE)	3
Interdisciplinary	3		
<b>Science and Mathematics 7 S.H.</b>		<b>FREE ELECTIVES</b>	<b>5-9 S.H.</b>
MATH 1016 Statistics**	3	at least 50% must be 3000/4000 level	
CHEM 1083 Chemistry I****	4		
<b>ADDITIONAL REQUIRED COURSES 32 S.H.</b>		<b>Special Notes:</b>	
		<sup>1</sup> See pre-requisites and equivalencies (on page 2)	
BIO 1300 Biology I	4	<sup>2</sup> University requirement for graduation for all undergraduate students that must be satisfied in one of two ways: Complete GE 1000 (all freshmen and transfers entering with 0-29 credits) OR complete GE 3000 (transfers entering with 30 credits or more)	
BIO 1400 Biology II	4		
***CHEM 1084 Chemistry II	4		
***CHEM 2180 Principles of Organic Chemistry	4	<sup>3</sup> ENG 1030 requires grade of C or higher	
MATH 2415 Calculus <sup>1</sup>	4	<sup>4</sup> Required by SESS; pre-req is MATH 1000 which may be used as a free elective by students needing to take MATH 1000 first	
PHYS 2091 General Physics I	4		
<b>Take any two (2) of the below four (4) courses</b>			
BIO 2500 Principles of Botany	4	*GE Distribution course required of all students	
BIO 3400 Zoology: Form and Function	4	**Course required by Major	
BIO 3709 Genetics	4	***All Major courses require a grade of C or better	
PHYS 2092 General Physics II	4	****Must earn a C grade or better to advance to CHEM 1084	

PROGRAM REVISION DATE (8/4/19)

# 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.

#### Additional Required Courses

MATH 2415: has a prereq of MATH 1054

#### GE/Major Capstone Course

A Capstone course is a major course that satisfies three credits of GE requirements.

Each major guide sheet will count three credits for the Capstone as either GE credits or major credits, but not both.

#### Optional Research and Internship Courses

Optional course that may be counted toward free electives.

#### WE-Writing Emphasis

Upon approval

## 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.

## **Program-focus Related Electives**

Should be chosen from the following list (at least half being at 3000 level and above)

### **ENVIRONMENTAL SCIENCE**

ENV 3230 URBAN ECOLOGY  
ENV 3240 LANDSCAPE ECOLOGY  
ENV 3250 MEDICINAL BOTANY  
ENV 3380 ENVIRONMENTAL INSTRUMENTATION  
ENV 3400 ENVIRONMENTAL OCEANOGRAPHY  
ENV 3600 CORAL REEFS & COASTAL SYSTEMS  
ENV 3720 ENTOMOLOGY  
ENV 4103 ENVIRONMENTAL HAZARDS  
ENV 4435 BEHAVIORAL ECOLOGY  
ENV 4600 PLANT-ANIMAL INTERACTIONS  
ENV 4601 MARINE CONSERVATION  
ENV 4605 FIELD METHODS IN MARINE RESEA  
ENV 4710 PHYSIOLOGICAL ECOLOGY

### **EARTH SCIENCE**

ES 1000 OBSERVING THE EARTH  
ES 1101 INTRODUCTION TO EARTH AND GEOGRAPHICAL SYSTEMS  
ES 2101 GEO-HYDRO SYSTEMS  
ES 2400 INTRODUCTION TO OCEANOGRAPHY  
ES 3000 GLOBAL CLIMATE CHANGE AND SOCIETY  
ES 3010 DATA ANALYSIS AND MODELING IN GEOSCIENCE  
ES 3200 GEOGRAPHIC INFO SYSTEMS IN GEOSCIENCE  
ES 3264 INVERTEBRATE PALEONTOLOGY  
ES 3266 HYDROLOGY  
ES 3801-3802 SPECIAL TOPICS IN EARTH SCIENCE  
ES 4200 REMOTE SENSING  
ES 4901-4902 SPECIAL TOPICS IN EARTH SCIENCE  
ES 4980 ENVIRONMENTAL INTERNSHIP\*

### **SUSTAINABILITY SCIENCE**

SUST 1000 INTRO TO SUSTAINABILITY SCI  
SUST 2008 INTRODUCTION TO COMPOSTING  
SUST 2200 INTRODUCTION TO LAWS & SUSTAINABILITY  
SUST 2202 RELIGION AND SUSTAINABILITY  
SUST 2203 INTERCULTURAL COMMUNICATION FOR SUSTAINABILITY  
SUST 3110 RENEWABLE ENERGY  
SUST 3200 ENV HLTH & SFTY FOR SUSTAIN  
SUST 3300 LEED LAB AND AP CREDENTIAL PREPARATION  
SUST 3400 INTRO TO ENVIRONMENTAL ENGINEERING  
SUST 3600 GLOBAL SUSTAINABLE DEVELOPMENT TL  
SUST 4000 TECHNOLOGIES FOR SUSTAIN  
SUST 4110 LIFE CYCLE ASSESSMENT  
SUST 4400 WATER AND WASTEWATER TREATMENT  
SUST 4500 AIR AND SOLID POLLUTION CONTROL

**ENVIRONMENTAL ETHICS - INTERDISCIPLINARY**

ID 1350 ENVIRONMENTAL ETHICS  
COMM 4200 ENVIRONMENTAL COMMUNICATION  
GBUS 4310 GLOBAL BUSINESS RESEARCH & ANALYTICS  
GBUS 4320 SUSTAINABLE GLOBAL BUS & TECHNOLOGY  
PHIL 2800 ENVIRONMENTAL PHILOSOPHY  
PSY 3420 ENVIRONMENTAL PSYCHOLOGY

**BIOLOGY**

BIO 2305 FUNDAMENTAL OF MICROBIOLOGY  
BIO 2403 HUMAN ANATOMY & PHYSIOLOGY I  
BIO 2404 HUMAN ANATOMY & PHYSIOLOGY II  
BIO 2500 PRINCIPLES OF BOTANY (\*If not taken as part of Additional Requirements)  
BIO 2650 INTRO TO MARINE BIOLOGY  
BIO 3000 MARINE BIOLOGY  
BIO 3060 BIOLOGY AND ECOLOGY OF BIRDS  
BIO 3100 MEDICAL TERMINOLOGY  
BIO 3200 BIOLOGY OF FOOD IN HEALTH AND DISEASE  
BIO 3315 PRINCIPLES OF MICROBIOLOGY AND BIO 3315L PRINCIPLES OF MICROBIOLOGY  
LABORATORY  
BIO 3317 INFECTIOUS PATHOGENS  
BIO 3400 ZOOLOGY: FORM AND FUNCTION (\*If not taken as part of Additional Requirements)  
BIO 3403 ANATOMY AND PHYSIOLOGY I  
BIO 3404 ANATOMY AND PHYSIOLOGY II  
BIO 3405 BASIC GROSS ANATOMY  
BIO 3406 NEUROSCIENCE  
BIO 3709 GENETICS (\*If not taken as part of Additional Requirements)  
BIO 3535 FIELD BOTANY  
BIO 4105 ESSENTIALS OF BIOCHEMISTRY  
BIO 4225 CELL PHYSIOLOGY  
BIO 4310 VIROLOGY  
BIO 4316 IMMUNOLOGY AND BIO 4316L IMMUNOLOGY LABORATORY  
BIO 4615 APPLIED ECOLOGY  
BIO 4700 MOLECULAR GENETICS  
BIO 4704 MOLECULAR BIOLOGY OF GENES

**CHEMISTRY**

CHEM 2283 QUANTITATIVE ANALYSIS  
CHEM 2491 INORGANIC CHEMISTRY  
CHEM 2493 DESC. INORG CHEM LAB  
CHEM 2581 ORGANIC CHEMISTRY I  
CHEM 2582 ORGANIC CHEMISTRY II  
CHEM 2584 ORGANIC CHEMISTRY LABORATORY AND RECITATION II  
CHEM 3190 MEDICINAL CHEMISTRY  
CHEM 3284 INSTRUMENTAL METH ANALYSIS  
CHEM 3381 PHYSICAL CHEMISTRY I  
CHEM 3382 PHYSICAL CHEMISTRY II  
CHEM 3383 PHYSICAL CHEM LAB/RECITATION I  
CHEM 3384 PHYSICAL CHEM LAB/RECITATN II

**CHEMISTRY -continued**

CHEM 3581 BIOCHEMISTRY  
CHEM 3583 BIOCHEMICAL TECHNIQUES  
CHEM 4184 INTRO TO MOLEC MOD & ITS APPL  
CHEM 4284 EXP ANALYTICAL PROB SOLVING  
CHEM 4285 CHEMICAL SEPARATION METHODS  
CHEM 4381 PHYSICAL CHEMISTRY III  
CHEM 4481 ADV INORG CHEMISTRY  
CHEM 4483 INORG CHEM LAB

**RECREATION**

REC 1100 INTRODUCTION TO THE RECREATION AND LEISURE PROFESSION  
REC 2915 INTRODUCTION TO HORTICULTURAL THERAPY  
REC 3500 HOSPITALITY AND TOURISM  
REC 3510 CULTURAL TOURISM: TRADITIONS AND PASTIME  
REC 3810 RECREATION & THE ENVIRONMENT

**SOCIOLOGY**

SOC 2500 INTRO TO GLOBAL STUDIES  
SOC 3150 URBAN SOCIOLOGY  
SOC 3151 THE COMMUNITY  
SOC 3360 POPULATION  
SOC 3420 ENVIRONMENT AND SOCIETY