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 

<table>
<thead>
<tr>
<th>GENERAL EDUCATION</th>
<th>32 Semester Hours (S.H.)</th>
<th>ACADMIC MAJOR**</th>
<th>47-51 S.H.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Requirements: 1</td>
<td>13 S.H.</td>
<td>Major Required Courses:</td>
<td>29-39 S.H.</td>
</tr>
<tr>
<td>GE 1000 Transition to Kean or GE 3000 Transfer Transitions 2</td>
<td>1</td>
<td>EN 1000 Introduction To Environmental Science</td>
<td>1</td>
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<tr>
<td>ENS 1030 Composition²</td>
<td>3</td>
<td>ENV 2000 Evolution and Biodiversity</td>
<td>4</td>
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<tr>
<td>**MATH 1054 Precalculus</td>
<td>3</td>
<td>ENV 2100 Ecosystem Science</td>
<td>4</td>
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<tr>
<td>COMM 1402 Speech Communication</td>
<td>3</td>
<td>ENV 3051 Field Biology: Terrestrial Systems or ENV 4005 Methods in Marine Research</td>
<td>4</td>
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<tr>
<td>GE 2024 Research &amp; Technology</td>
<td>3</td>
<td></td>
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<tr>
<td>Disciplinary &amp; Interdisciplinary Distribution Requirements: 1</td>
<td>19 S.H.</td>
<td>ENV 3100 Principles of Environmental Soil Science</td>
<td>4</td>
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<tr>
<td>Humanities5 S.H. (from different areas)</td>
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<td>ENV 3201 Biodiversity Assessment</td>
<td>4</td>
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<tr>
<td>ENS 2403 World Literature</td>
<td>3</td>
<td>ENV 4210 Conservation Biology</td>
<td>4</td>
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<tr>
<td>*EN 1000 Independent Study in SESS (1 credit) or ENV 4962 Independent Study in SESS (2 credits)</td>
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<td>1-2</td>
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<tr>
<td>Take one “GE Approved” course from one area below</td>
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<tr>
<td>Fine Arts/Art History</td>
<td>3</td>
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<tr>
<td>Philosophy or Religion</td>
<td>3</td>
<td></td>
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<tr>
<td>Foreign Languages (Must take I and II for credit)</td>
<td>3</td>
<td></td>
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<tr>
<td>Music or Theatre</td>
<td>3</td>
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<tr>
<td>Interdisciplinary</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>Social Sciences 6 S.H. (from different areas)</td>
<td>Optional: ES 1996 Freshmen Seminar</td>
<td>1-2</td>
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<tr>
<td>*HIST 1062 Worlds of History</td>
<td>3</td>
<td>Optional: ES 3171-3173 Internship</td>
<td>1-3</td>
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<tr>
<td>Take one “GE Approved” course from one area below</td>
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<tr>
<td>Psychology</td>
<td>3</td>
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<tr>
<td>Economics or ES 1010-World Geography</td>
<td>3</td>
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<tr>
<td>Political Science</td>
<td>3</td>
<td><strong>Major Capstone Course</strong>*:</td>
<td>3 S.H.</td>
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<tr>
<td>Sociology or Anthropology</td>
<td>3</td>
<td>SUST 4300 Independent Practicum in Sustainability (WE)</td>
<td>3</td>
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<tr>
<td>Interdisciplinary</td>
<td>3</td>
<td></td>
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<tr>
<td>Science and Mathematics 7 S.H.</td>
<td>FREE ELECTIVES 5-9 S.H.</td>
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<tr>
<td>MATH 1016 Statistics**</td>
<td>3</td>
<td>at least 50% must be 3000/4000 level</td>
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<tr>
<td>CHEM 1083 Chemistry I****</td>
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<tr>
<td>ADDITIONAL REQUIRED COURSES 32 S.H.</td>
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<td>Special Notes:</td>
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<tr>
<td>BIO 1300 Biology I</td>
<td>4</td>
<td>*See pre-requisites and equivalencies (on page 2)</td>
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<tr>
<td>BIO 1400 Biology II</td>
<td>4</td>
<td>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 32 credits) OR complete GE 3000 (transfers entering with 30 credits or more)</td>
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<tr>
<td>**CHEM 1084 Chemistry II</td>
<td>4</td>
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<tr>
<td>**CHEM 2180 Principles of Organic Chemistry</td>
<td>4</td>
<td>**ENG 1030 requires grade of C or higher</td>
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<tr>
<td>MATH 2415 Calculus</td>
<td>4</td>
<td>*Required by SESS; pre-reg is MATH 1000 which may be used as a free elective by students needing to take MATH 1000 first</td>
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<tr>
<td>PHYS 2091 General Physics I</td>
<td>4</td>
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<tr>
<td>Take any two (2) of the below four (4) courses</td>
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<td>BIO 2500 Principles of Botany</td>
<td>4</td>
<td>*GE Distribution course required of all students</td>
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<tr>
<td>BIO 3400 Zoology: Form and Function</td>
<td>4</td>
<td>**Course required by Major</td>
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<tr>
<td>BIO 3708 Genetics</td>
<td>4</td>
<td>***All Major courses require a grade of C or better</td>
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<tr>
<td>PHYS 2092 General Physics II</td>
<td>4</td>
<td>****Must earn a C grade or better to advance to CHEM 1084</td>
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</tbody>
</table>

PROGRAM FOCUS-RELATED ELECTIVES 16-19 S.H. 
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. 

Major Elective Courses: 16-19 S.H. 

PROGRAM REVISION DATE (6/4/19) 

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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 a core-based course
GE 2021 College of BPM GE 2022 College of EDO
GE 2023 College of CLA GE 2024 College of NAHS & NJCST & NWGC
GE 2025 SFP & Michael Graves College
GE 2025 Undecided Majors and other special populations
Prereq: 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 prerequisite 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 1000/2000 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 2000 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 ANALTICAL 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