Revised Guidesheet

KEAN UNIVERSITY – COLLEGE OF NATURAL, APPLIED & HEALTH SCIENCES
(76205) B.S. IN Earth Science (Option: ENVIRONMENTAL SCIENCE) 120 Cr
Minimum GPA Required for Declaration: 2.50
Minimum GPA required for Major: 2.50
Overall Minimum GPA Required for Graduation: 2.50

EFFECTIVE DATE: Fall 2019

<table>
<thead>
<tr>
<th>GENERAL EDUCATION: 32 Semester Hours (S.H.)</th>
<th>ACADEMIC MAJOR REQUIREMENTS: 35 S.H.***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foundation Requirements 13 S.H.*</td>
<td>ENV 1000 Introduction to Environmental Science 3</td>
</tr>
<tr>
<td>G.E. 1000 Transition to Keans or</td>
<td>ENV 2100 Ecosystem Science 4</td>
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<tr>
<td>G.E. 3000 &quot;Transfer Transitions&quot;*</td>
<td>ENV 3051 Field Biology: Terrestrial Systems OR</td>
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<td>ENV 4805 Methods in Marine Research 4</td>
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<td>ENG 1030 College Composition*</td>
<td>ES 1101 Introduction to Earth and Geog. Syst. 4</td>
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<td>MATH 1054 Precalculus*</td>
<td>ES 1300 Introduction to Meteorology 4</td>
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<td>COMM 1402 Speech Communication</td>
<td>ES 2101 Geo-Hydro System 4</td>
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<td>GE 2024 Research &amp; Technology</td>
<td>ES 2400 Introduction to Oceanography 4</td>
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<td>ES 3010 Data Analysis and Modeling in Geoscience 4</td>
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<td>ES 3200 GIS in Geoscience 4</td>
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<tr>
<td>Disciplinary &amp; Interdisciplinary Distribution Requirements</td>
<td>Humanities: 6 S.H. (from different areas)</td>
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<td></td>
<td>Social Sciences: 6 S.H. (from different areas)</td>
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<td></td>
<td>Optional: ES 1996 Research Initiative for First-Year Students* 1</td>
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<td></td>
<td>Fine Arts/Art History* 3</td>
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<td></td>
<td>HIST 1062 Worlds of History* 3</td>
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<td>Take one &quot;GE Approved&quot; course from one area below</td>
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<tr>
<td></td>
<td>Foreign Languages (Must take I and II for credit) 3</td>
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<td>Interdisciplinary 3</td>
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<td>Music or Theatre 3</td>
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<td>Philosophy or Religion 3</td>
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<td>ES 1010 World Geography or Economics 3</td>
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<td>Political Science 3</td>
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<td>Major Capstone Course: 3 S.H. ***</td>
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<td>Psychology 3</td>
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<td>SUST 4300 Independent Practicum in Sustainability Science (WE) 3</td>
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<td>Sociology or Anthropology 3</td>
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FREE ELECTIVES: 8 S.H.

<table>
<thead>
<tr>
<th>Science and Mathematics: 7 S.H.</th>
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<tbody>
<tr>
<td>MATH 1016 Statistics*</td>
<td>Special Notes:</td>
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<tr>
<td>CHEM 1083 Chemistry I ****</td>
<td>*See pre-requisites and equivalencies (on page 2)</td>
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<td>*University requirement for graduation for all undergraduate students that</td>
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<td>must be satisfied in one of two ways: Complete GE1000 (all freshmen</td>
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<td>and transfers entering with 0-29 credits) OR complete GE 3000</td>
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<td>(transfers entering with 30 credits or more)</td>
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<td>*ENG 1030 requires grade of C or higher</td>
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<td>*Required by SESS; pre-req is MATH 1000 which may be used as a</td>
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<tr>
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<td>free elective by students needing to take MATH 1000 first</td>
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<td>*May be taken twice for a total of 2 credits</td>
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<td>*GE Distribution course required of all students</td>
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<td></td>
<td>***All Major courses require a grade of C or better</td>
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<td></td>
<td>****Must earn a grade of C or better to advance to CHEM 1084</td>
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<tr>
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<td>*Students may be required to take ENG 1025 Introduction to</td>
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<td>Composition as a prerequisite</td>
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ADDITIONAL REQUIREMENTS: 27 S.H.

| BIO 1300 General Biology I     | |
| BIO 1400 General Biology II    | |
| CPS 1231 Fundamentals of Computer Science | |
| CHEM 1084 Chemistry II        | |
| SUST 1000 Introduction to Sustainability Science | |
| MATH 2415 Calculus I          | |
| PHYS 2091 General Physics I   | |

Revised: 5/6/19

TOTAL CREDITS:
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 & NUOCTM & NWCC
GE 2025 SPFA & Michael Graves College
GE 2026 Undecided Majors and other special populations
Prereqs: CS 0412 if required by placement testing ENG 1030 or equivalent
Equiv: COMM 1402

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 1082 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 RESEARCH
- 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 3254 INVERTEBRATE PALEONTOLOGY
- ES 3256 HYDROLOGY
- ES 4200 REMOTE SENSING
- 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 2600 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
Program-focus Related Electives
Should be chosen from the following list (at least half being at 3000 level and above)

CHEMISTRY -continued
CHEM 3383 PHYSICAL CHEM LAB/RECITATION I
CHEM 3394 PHYSICAL CHEM LAB/RECITATION II
CHEM 3581 BIOCHEMISTRY
CHEM 3583 BIOCHEMICAL TECHNIQUES
CHEM 4184 INTRO TO MOLEC MOD & ITS APPL
CHEM 4284 EXP ANALITICAL 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