

**Executive Committee
College of Natural and Agricultural Science**

**Report to Riverside Division
December 4, 2018**

To be adopted:

Proposed changes to the undergraduate major requirements in Environmental Sciences

PRESENT:

Major

The Department of Environmental Sciences offers B.A. and B.S. degrees in Environmental Sciences. ~~Students can choose to concentrate their studies in one of two options: Natural Science and Environmental Toxicology.~~

~~The necessity of maintaining an acceptable level of environmental quality is placing increasing demands upon governments and industries locally, nationally, and worldwide. To help meet those demands, the Environmental Sciences program is designed to provide training for students intending to enter environmental professions or for students preparing for graduate study in law, research, or teaching in a capacity that utilizes a background in the science of the human environment.~~

~~The structure of the Environmental Sciences curriculum provides a broad scope of instruction that enables students to explore the various disciplines and professions involved with solving environmental problems as well as opportunities for students to focus their training in accordance with their own educational and career objectives. All students majoring in Environmental Sciences must complete a set of “core requirements” consisting of courses that provide a basic understanding of the physical,~~

PROPOSED:

Major

The Department of Environmental Sciences offers B.A. and B.S. degrees in Environmental Sciences. Students are encouraged to concentrate their studies in one of five specialization areas: Soil Sciences, Hydrologic Sciences, Atmospheric Sciences, Environmental Toxicology, and Environmental Management.

Modern human activities related to natural resource development, agriculture, urbanization, industry, and transportation are placing unprecedented pressure on the earth’s life support systems. Changes taking place in atmospheric physics and chemistry, land cover, freshwater and marine resources, and chemical cycling threaten the ability of human society to sustainably meet current and future needs. Science-based solutions are needed to sustainably manage our natural resources and improve public health. To help meet these challenges, our program emphasizes training for students in the biological, chemical, and physical aspects of environmental sciences and health, centered on the major environmental media of air, soil, water, and the biosphere.

The structure of the Environmental Sciences curriculum provides a broad scope of instruction that enables students to explore various disciplines and professions focused on solving environmental problems. All students majoring in Environmental Sciences must complete a set of “core requirements” consisting of courses that provide a basic understanding of the physical, biological, and social sciences and their application to the analysis of environmental

biological, and social sciences and their application to the analysis of environmental processes and issues. ~~In addition to the core requirements, students must complete the required courses and an appropriate number of elective courses as designated in the option they select. Students are not expected to select an option during the freshman year so that they can be introduced to dimensions of the environmental sciences about which they may have no previous knowledge. Those wishing to change their selection of an option may do so at any time as long as they are able to complete the requirements for the bachelor's degree within the 216-unit limit specified by the College of Natural and Agricultural Sciences.~~

processes and management issues. In addition to the core requirements, students must complete 8 units of lower-division and 20 units of upper-division elective courses.

Students have the option to select their electives from different specialization areas or to focus their training in one of the five specialization areas based on their own educational and career objectives. The specialization areas of Soil Sciences, Hydrologic Sciences, or Atmospheric Sciences are suitable for students wishing to maintain a broad range of choices in technically-oriented environmental professions such as pollution control, hazardous materials management, public health, natural resource management, environmental monitoring, and impact analysis. These options also provide the necessary background for graduate study in soil science, water resources, or atmospheric sciences as well as interdisciplinary areas such as ecosystem science and forestry. The Environmental Toxicology specialization area emphasizes the chemistry and biochemistry of toxic substances in the environment, preparing students for careers dealing with the control of contaminants in various environmental media as well as related fields such as public health and industrial hygiene. The Environmental Management specialization area is oriented for the social context of environmental sciences and prepares students for careers dealing with environmental regulation, land-use planning, environmental impact analysis, and administration of environmental protection programs.

Environmental Internship Program

The Environmental Internship Program offers students opportunities to work with government agencies, private firms, and nonprofit organizations involved in environmental affairs. As excursions into professional life, internships provide “hands-on” experience in applying the principles presented in courses. Beyond the highly specialized training associated with on-the-job activities, students can gain insights into their aptitudes, aspirations and work habits that enable them to clarify their academic and career objectives. Professional acquaintances established during internships can continue to

Environmental Internship Program

[No Change]

serve as important contacts for students after the internship is completed.

Although most internships are part-time (12–15 hours per week) positions in the Riverside area, organizations that host student interns are located throughout the United States and in Washington, D.C. Students working as interns may receive stipends, hourly wages, or serve as volunteers, depending upon the specific appointment. Up to 16 units of credit toward the bachelor's degree may be earned by developing an academic component of the internship in consultation with a faculty supervisor and enrolling in ENSC 198-I.

[No Change]

Undergraduate Research

Students interested in enhancing the status of knowledge about environmental processes or seeking new solutions to environmental problems may gain training and experience as part-time employees in the department's research laboratories and other research facilities, such as ~~the Air Pollution Research Center and the U.S. Department of Agriculture Soil and Water Research Service, located on campus.~~ Those wishing to conduct their own research under faculty supervision may earn academic credit by enrolling in ENSC 197. Expenses for both laboratory and field experiments are eligible for funding by the campus mini-grant program which supports undergraduate research and creative activity.

~~Environmental Toxicology Option~~

~~As a curriculum that emphasizes the chemistry and biochemistry of toxic substances in the environment, this option prepares students for careers dealing with the control of toxics in the environmental media of air, water, soil, and ecosystems and in such related fields as public health and industrial hygiene. Qualified students completing this option may enter UCR's graduate program in Environmental Toxicology without significant deficiencies in their undergraduate curriculum.~~

Natural Science Option

Undergraduate Research

Students interested in enhancing the status of knowledge about environmental processes or seeking new solutions to environmental problems may gain training and experience as part-time employees in the department's research laboratories and other research facilities, such as the U.S. Salinity Laboratory, located on campus, and the USDA Pacific Southwest Research Station, located on Canyon Crest Drive. Those wishing to conduct their own research under faculty supervision may earn academic credit by enrolling in ENSC 197. Expenses for both laboratory and field experiments are eligible for funding by the campus mini-grant program which supports undergraduate research and creative activity.

~~As a general curriculum emphasizing the natural sciences, this option is suitable for students wishing to maintain a broad range of choices in technically oriented environmental professions such as air and water pollution control, hazardous materials management, public health, natural resource management, and environmental impact analysis. The Natural Science option is also appropriate as background for graduate study in such disciplines as ecology, forestry, air and water science, and environmental engineering. Students may earn either the B.A. or B.S. degree by completing the requirements specified by the College of Natural and Agricultural Sciences.~~

California Teach-Science/Mathematics Initiative (CaTEACH-SMI)

California Teach-Science Mathematics Initiative (CaTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

~~CaTEACH-SMI at UCR offers undergraduate students paid/unpaid opportunities, such as the SMI & Alpha Center Apprentice Program, to explore STEM teaching as a career option. Through CaTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CaTEACH-SMI Resource Center provides future STEM teachers with material and financial resources which includes the National Science Foundation (NSF) Noyce Scholarship Program, to promote planning and professional development towards a science/mathematics education career.~~

For more information about the CaTEACH-SMI program, please visit smi.ucr.edu, the Resource Center at 1315 Pierce Hall, or on Facebook at [facebook.com/ScienceMathInitiativeAtUcr](https://www.facebook.com/ScienceMathInitiativeAtUcr).

California Teach-Science/Mathematics Initiative (CalTEACH-SMI)

California Teach-Science Mathematics Initiative (CalTEACH-SMI) has a goal of addressing the critical need of highly qualified K-12 science and mathematics teachers in California. With an economy increasingly reliant on science, technology, engineering, and mathematics (STEM) and the anticipated large scale retirement of qualified teachers, this is an essential time to explore and prepare for a career in teaching science or mathematics.

CalTEACH-SMI at UCR offers undergraduate students opportunities to explore STEM teaching as a career option. Through CalTEACH-SMI, students receive advising and mentoring to prepare for entrance into an intern teaching credential program while diligently coordinating with academic advisors to ensure completion of STEM degree requirements. The CalTEACH-SMI Resource Center provides future STEM teachers opportunities to promote planning and professional development towards a science/mathematics education career.

For more information about the CalTEACH-SMI program, please visit smi.ucr.edu or on Facebook at [facebook.com/ScienceMathInitiativeAtUcr](https://www.facebook.com/ScienceMathInitiativeAtUcr).

Transfer Selection Criteria

Applicants to majors in the College of Natural and Agricultural Sciences are selected on the basis of academic preparation, as assessed by their GPA and the strength of preparation for the intended major. A GPA of at least 2.70 is required. (This is a baseline GPA for consideration and not a guarantee of admission.)

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C” grades or better:

MATH 007A or MATH 009A; MATH 007B or MATH 009B (mandatory)

And at least one sequence from:

1. BIOL 005A/BIOL 05LA or BIOL 020 and BIOL 005B (and BIOL 005C, if articulated)

2. CHEM 001A, CHEM 01LA, CHEM 001B, CHEM 01LB, CHEM 001C, and CHEM 01LC

3. Organic chemistry (one-year lower-division), each course completed with a grade of “B” or better

4. PHYS 002A, PHYS 02LA, PHYS 002B, PHYS 02LB, PHYS 002C, and PHYS 02LC

5. PHYS 040A, PHYS 040B, and PHYS 040C

6. MATH 009C, MATH 010A, MATH 010B, and MATH 046

Courses must be completed with a letter grade, with no grade lower than a “C.” Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

See Undergraduate Studies section.

College Requirements

Transfer Selection Criteria

[No Change]

In addition, applicants will need to complete college courses comparable to at least two of the following UCR year-long sequences in order to meet selection criteria for this major. Courses must be completed with “C-” grades or better:

[No Change]

[No Change]

[No Change]

[No Change]

[No Change]

[No Change]

[No Change]

Courses must be completed with a letter grade, with no grade lower than a “C-.” Students should visit assist.org for updated and comprehensive major preparation requirements.

University Requirements

[No Change]

College Requirements

See College of Natural and Agricultural Sciences, Colleges and Programs section.

[No Change]

Some of the following requirements for the major may also fulfill some of the College's breadth requirements. Consult with a department advisor for course planning.

[No Change]

Major Requirements

The major requirements for both the B.A. and the B.S. degrees in Environmental Sciences are as follows: Students must fulfill MATH 007A or MATH 009A; MATH 007B or MATH 009B; CHEM 001A, CHEM 001B, CHEM 001C; ~~BIOL 002 or~~ BIOL 005A; ~~BIOL 003 or~~ BIOL 005B; or BIOL 020, ENSC 001, ENSC 002, ENSC 006, ENSC 100, ENSC 101, and ENSC 102 with a grade point average of 2.0 or better and no grade lower than a C-. If a grade lower than a C- is received in 2 or more core courses required for the major, either in separate courses or repetitions of the same course, the student may be discontinued from the major. Students must, under such circumstances, petition the department to remain in the major. ~~Students are also required to choose one of the options and satisfactorily complete the option requirements.~~ Students in Environmental Sciences are required to demonstrate adequate progress towards earning the degree. Adequate progress is defined as completion of MATH 009B or MATH 007B prior to the beginning of the Winter Quarter of the second year of residence or Junior standing (>90 units) and at least one course from ENSC 100, ENSC 101, or ENSC 102 must be completed prior to the end of the third year of residence or senior standing (>135 units).

Note To gain maximum benefit from participating in the Undergraduate Research and Environmental Internship Programs, students intending to enroll in ENSC 197 and ENSC 198-I should contact their advisor during the quarter prior to enrollment in these courses.

Core Requirements

4. Lower-division requirements (~~36 units~~)

Major Requirements

The major requirements for both the B.A. and the B.S. degrees in Environmental Sciences are as follows: Students must fulfill MATH 007A or MATH 009A or MATH 09HA; MATH 007B or MATH 009B or MATH 09HB; CHEM 001A or CHEM 01HA, CHEM 001B or CHEM01HB, CHEM 001C or CHEM 01HC; BIOL 005A; BIOL 005B; BIOL 05LA or BIOL 020; ENSC 001, ENSC 002, ENSC 006, ENSC 100, ENSC 101, and ENSC 102 with a grade point average of 2.0 or better and no grade lower than a C-. If a grade lower than a C- is received in 2 or more core courses required for the major, either in separate courses or repetitions of the same course, the student may be discontinued from the major. Students must, under such circumstances, petition the department to remain in the major. Students in Environmental Sciences are required to demonstrate adequate progress towards earning the degree. Adequate progress is defined as completion of MATH 009B or MATH 09HB or MATH 007B prior to the beginning of the Winter Quarter of the second year of residence or Junior standing (>90 units) and at least one course from ENSC 100, ENSC 101, or ENSC 102 must be completed prior to the end of the third year of residence or senior standing (>135 units).

[No Change]

Core Requirements

1. Lower-division requirements (72 or 73 units)

a) ENSC 001, ENSC 002

b) ~~CHEM 001A, CHEM 001B, CHEM 001C,
CHEM 01LA, CHEM 01LB, CHEM 01LC~~

b) ~~MATH 007A or MATH 009A; MATH
007B or MATH 009B~~

d) ~~POSC 010~~

a) ENSC 001, ENSC 002, ENSC 006 or
ECON 006

b) BIOL 005A, BIOL 05LA or BIOL 020,
BIOL 005B

c) CHEM 001A or CHEM 01HA, CHEM
001B or CHEM 01HB, CHEM 001C or
CHEM 01HC, CHEM 01LA or CHEM
1HLA, CHEM 01LB or CHEM 1HLB,
CHEM 01LC or CHEM 1HLC

d) CHEM 008A and CHEM 08LA or CHEM
08HA and CHEM 08HLA; CHEM 008B
and CHEM 08LB or CHEM 08HB and
CHEM 08HLB

e) MATH 007A or MATH 009A or MATH
09HA; MATH 007B or MATH 009B or
MATH 09HB

f) PHYS 002A or PHYS 02HA, PHYS 02LA
or PHYS 02HLA, PHYS 002B or PHYS
02HB, PHYS 02LB or PHYS 02HLB,
PHYS 002C or PHYS 02HC, PHYS 02LC
or PHYS 02HLC

g) POSC 010

2.-Upper-division requirements (~~14 units~~):
~~ENSC 100, ENSC 101, ENSC 102, ENSC 191~~

2. Upper-division requirements (24 units):

a) ENSC 100, ENSC 101, ENSC 102, ENSC
191

b) STAT 100A and STAT 100B

Electives

Students are free to choose from the lists below to
fulfill their lower-division and upper-division
elective requirements:

1. Lower-division electives (8 units):

At least two electives from BIOL 005C,
CHEM 005, CHEM 008C and CHEM 08LC,
CHEM 08HC and CHEM 08HLC, MATH
009C or MATH 09HC or MATH 010A, GEO
001 or GEO 002

2. Upper-division electives (20 units):

At least five electives from the following list, with a minimum of four from Environmental Sciences or Environmental Toxicology:

ENTX 101, ENTX 154, ENSC 103/ENTX 103, ENSC 104, ENSC 105, ENSC 107, ENSC 110, ENSC 120/NEM 120, ENSC 127, ENSC 130, ENSC 133/MCBL 133, ENSC 134/BPSC 134, ENSC135/CHEM 135/ENTX 135, ENSC 136/CHEM136, ENSC 138/GEO 138, ENSC 140, ENSC 141/MCBL141, ENSC 144/ENVE 144, ENSC 153, ENSC 163, ENSC 165, ENSC 172, ENSC 174, ENSC 175, ENSC 177, ENSC 197, ENSC 198-I, BCH 100 or both BCH 110A or BCH 110HA and BCH 110B or BCH 110HB; BCH 110C or BCH 110HC or BIOL 107A; BIOL 102 or BIOL 121/MCBL 121; BIOL 116, BIOL 121L/MCBL 121L, BPSC 104/BIOL 104, BPSC 165, BPSC 166, CBNS 150/ENTX 150, CHEM 109, GEO 157, GEO 160

Suggested courses of study are also provided below for specialized areas in environmental sciences to assist students to meet minimum employment requirements for entry-level positions in government agencies, non-government organizations (NGO), and environmental consulting firms. Students are strongly encouraged to schedule a meeting with a Faculty in their specialization area of interest for curriculum and career advice. A list of core Faculty in each specialization area is available at <http://envisci.ucr.edu/undergrad/>.

Environmental Toxicology Option (72-78 units)

1. ~~BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B~~
2. ~~CHEM 005 or BIOL 005C; CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 8HLA or CHEM 12A, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 8HLB or CHEM 12B, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 8HLC or CHEM 12C~~
3. ~~ENTX 101, ENTX 154~~

Soil Sciences: Recommended to meet lower-division electives: BIOL 005C, GEO 001 or GEO 002, MATH 009C or MATH 09HC or MATH 010A; Recommended to meet upper-division electives: ENSC 104, ENSC 107, ENSC 110, ENSC 120, ENSC 127, ENSC 133/MCBL 133, ENSC 134/ BPSC134, ENSC 138/GEO 138, ENSC 144, ENSC 175, ENSC 177

Hydrologic Sciences: Recommended to meet lower-division electives: MATH 009C or MATH 09HC or MATH 010A, GEO 001 or GEO 002; Recommended to meet upper- division electives: ENSC 105, ENSC 107, ENSC 110, ENSC 127,

4. ~~PHYS 002A, PHYS 002B, PHYS 002C~~

5. ~~PHYS 02LA, PHYS 02LB, PHYS 02LC are recommended~~

6. ~~ENSC 006/ECON 006~~

7. ~~BCH 100 or both BCH 110A and BCH 110B; BIOL 102 or BIOL 121/MCBL 121; BCH 110C or BIOL 107A~~

8. ~~STAT 100A and STAT 100B~~

9. ~~Elective Courses: At least one course from ENSC 127, ENSC 133/MCBL 133, ENSC 135/CHEM 135/ENTX 135, ENSC 136/CHEM 136/ENTX 136, ENSC 140, ENSC 141/MCBL 141, ENSC 144/ENVE 144, ENSC 163, BPSC 134/ENSC 134, ENSC 103/ENTX 103, ENSC 104, ENSC 107, ENSC 138/GEO 138, CBNS 150/ENTX 150, ENSC 197, ENSC 198-I~~

Natural Science Option (70-71 units)

1. ~~BIOL 005A, BIOL 05LA or BIOL 020, BIOL 005B~~

2. ~~PHYS 002A, PHYS 002B, PHYS 002C~~

3. ~~PHYS 02LA, PHYS 02LB, PHYS 02LC are Recommended~~

4. ~~CHEM 008A and CHEM 08LA or CHEM 08HA and CHEM 8HLA or CHEM 12A, CHEM 008B and CHEM 08LB or CHEM 08HB and CHEM 8HLB or CHEM 12B~~

5. ~~GEO 001 or GEO 002~~

6. ~~ENSC 006/ECON 006~~

7. ~~STAT 100A and STAT 100B~~

8. ~~Elective Courses:~~

a) ~~At least one course from BIOL 005C, CHEM 005, CHEM 008C and CHEM 08LC, CHEM 08HC and CHEM 8HLC, CHEM 12C, MATH 009C~~

b) ~~A total of at least five courses from the following (at least three must be Environmental Sciences)~~

ENSC 136/CHEM136, ENSC 140, ENSC 163, ENSC 165, ENSC 175, ENSC 177

Atmospheric Sciences: Recommended to meet lower-division electives: CHEM 005, CHEM 08C and CHEM 08LC, CHEM 08HC and CHEM 08HLC, MATH 009C or MATH 09HC or MATH 010A; Recommended to meet upper-division electives: ENSC 103/ENTX 103, ENSC 110, ENSC 130, ENSC135/CHEM 135/ENTX 135, ENSC 136/CHEM 136, ENSC 175, ENSC 177, GEO 160

Environmental Toxicology: Recommended to meet lower-division electives: BIOL 005C, CHEM 005, CHEM 008C and CHEM 08LC or CHEM 08HC and CHEM 8HLC; Recommended to meet upper-division electives: ENTX 101 required + at least 3 electives from ENSC or ENTX: ENSC 103/ENTX 103, ENSC 110, ENSC 135/CHEM 135/ENTX 135, ENSC 136/CHEM 136, ENSC 177, CBNS 150/ENTX 150, ENTX 154, BCH 100 or both BCH 110A or BCH 110HA and BCH 110B or BCH 110HB, BIOL 102 or BIOL 121, BCH 110C or BCH 110HC or BIOL 107A

Environmental Management: Recommended to meet lower-division electives: BIOL 005C, GEO 001 or GEO 002, MATH 009C or MATH 09HC or MATH 010A; Recommended to meet upper-division electives: ENSC 103/ENTX 103, ENSC 110, ENSC 144, ENSC 153, ENSC 172, ENSC 174, ENSC 175, ENSC 177

~~BIOL 116, BIOL 121/MCBL 121, BIOL 121L/MCBL 121L, BPSC 104/BIOL 104, BPSC 165, BPSC 166, CHEM 109, ENSC 120/NEM 120, ENSC 127, ENSC 133/MCBL 133, ENSC 135/CHEM 135/ENTX 135, ENSC 136/CHEM 136, ENSC 140, ENSC 141/MCBL 141, ENSC 144/ENVE 144, ENSC 163, ENSC 174, BPSC 134/ENSC 134, ENSC 103/ENTX 103, ENSC 104, ENSC 105, ENSC 107, ENSC 138/GEO 138, ENSC 197, ENSC 198 I, ENTX 101, GEO 157, GEO 160~~

Justification:

The ENSC undergraduate program (UGP) has undergone significant changes in the past ~ 5 years after modifications to the requirements to improve quality of students entering the College/Department and elimination of the Social Science option. During this time, we have also recruited an outstanding group of junior Faculty who are developing new and exciting courses. Faculty who teach required courses in the current Environmental Toxicology option (ENTX 101 and ENTX 154) have noted a decline in student enrollment. Declining enrollment in these courses is likely a result of a decrease in the number of students entering the program from pre-med majors and possibly also due to the more extensive course requirements in the Environmental Toxicology option (48-52 upper division requirements vs. 44 units). It was therefore necessary for the department to evaluate the ENSC UGP and streamline degree requirements to simplify choices for students and advisors while maintaining a rigorous curriculum, preparing students for careers in the field of environmental sciences or graduate school. To achieve this while providing options for electives compatible with individual student's career goals, the decision in the department was to eliminate the Environmental Toxicology and Natural Science options within ENSC UGP, create a single Environmental Sciences major with a single set of lower and upper division requirements, and provide guidance for students wishing to develop a specialization area. This guidance is informed by educational requirements for entry level positions in government and industry (e.g., USDA, USDI, Ca DPH, etc.) and the expectations for admission to various graduate programs. The five specialization areas outlined in the major, namely Soil Sciences, Hydrologic Sciences, Atmospheric Sciences, Environmental Toxicology, and Environmental Management, cover the different media and aspects of environmental sciences that comprise the heart of ENSC faculty and our academic plan.

The modification is to describe the ENSC Major in a more up-to-date and appealing context with a focus on topics covered by the current composition of Faculty and courses. With elimination of the Environmental Toxicology and Natural Science options and introduction of the five specialization areas, it was necessary to add short descriptions for each area.

The core requirements for the Major are based on the most relevant requirements of the Environmental Toxicology and Natural Science options. The biology requirements of the Major are updated to ensure BIOL 002 and BIOL 003 are not accepted alternative courses to BIOL 005A and BIOL 005B (historically, BIOL 002 and BIOL 003 were required for the Social Science track students while BIOL 005A-B were required for Environmental Toxicology and Natural Science option students). Additionally, previously Physics 002 lab series were only recommended for students; given the importance of hands-on experience

for students for better understanding of the material, PHYS 02LA, PHYS 02LB, and PHYS 02LC are now required from all Majors.

The suggested lists of the lower and upper division electives for a given specialization area are provided as guidance to students and advisors. The electives are based on the current list of electives for the Environmental Toxicology and Natural Science options as well as new and approved courses by our recently-hired faculty. Since the content of MATH 010A is more applicable to some of the upper level courses in Environmental Sciences, MATH 010A is now added as a lower division math elective. Upon approval of these changes, we will also create a link at <http://envisci.ucr.edu/undergrad/>, titled “Guidelines for Selecting Elective Courses”, containing information on the elective choices and a list of Faculty in each specialization area.

The number of upper division requirements for the Major is at 44 units, which is within the maximum 45 unit requirement. The total Major core requirements and electives are now at 124-125 units. Previously, the total Major core requirements and electives in Environmental Toxicology and Natural Science options were at 122-128 and 120-121 units, respectively.

Approvals:

Approved by the faculty of the Department of Environmental Sciences:	September 21, 2018
Approved by the Executive Committee of the College of Natural and Agricultural Sciences:	October 2, 2018
Approved by the Committee on Educational Policy:	November 16, 2018

7 November, 2018

Re: Response to Feedback on Proposed Change to the Environmental Sciences Major

To Members of the Committee on Education Policy:

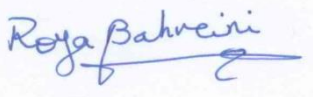
The Environmental Sciences Department is grateful for the feedback received from the CEP. The department has discussed and voted on the proposed changes. Final modifications are highlighted in the attached file. Below you find our response:

- The program's curriculum notes support from the NSF Noyce grant, however the Committee noted concern that this grant is no longer active and recommends that the mention to the grant be removed.
The section in the catalog describing CaTeach-SMI is now updated. References to funding opportunities, the expired NSF grant, and the location of the SMI Resource Center are removed. The abbreviation is also updated to CalTeach-SMI to align with that used by UCOP.
- The Committee noted concern that in the Transfer Selection Criteria section it is stated that "Courses must be completed with a letter grade, with no grade lower than a C". The Committee recommends that this statement be reconsidered as a single C- will disqualify students.
The proposed change of minimum course grade for transfer students to C- has been made. The department is supportive of this change given that it might increase the number of transfer students to the program without significantly impacting the quality.
- The Committee noted concern that the proposed curriculum states that students have the option of choosing either MATH 009A or MATH 009B or MATH 007A or MATH 007B. MATH 007A and MATH 007B are designed for the Life Sciences and the Committee requests that the program consider whether they want to retain both options or if one of the two sequences might serve the students better than the other.
Given the wide range of student backgrounds and interests in Environmental Sciences (those with an interest in biology/toxicology vs. those with an interest in physical sciences), the Department believes that providing a choice for the calculus-based math series serves our students the best.
- The Committee recommends that the program consider adding the PHYS 040 series as an alternate to the PHYS 002 series as the PHYS 040 series is calculus based and might fit better with the MATH 009 requirement.
Our major requirements include only 2 quarters of calculus, whereas PHYS 040B and PHYS 040C have the prerequisite of MATH 009C. We therefore cannot add PHYS 040 series as an alternative.

- The Committee recommends that the program consider adding the equivalent Honors courses for the Chemistry, Physics and Math requirements.
Honors courses for Chemistry, Biochemistry, Physics, and Math requirements/electives are now added.

Please don't hesitate to contact me if you have any questions.

Sincerely,



Roya Bahreini, Ph.D.
Associate Professor of Atmospheric Science
Dept. of Environmental Sciences
Chair of ENSC Undergraduate Education Committee
University of California- Riverside
951-827-4506
Roya.Bahreini@ucr.edu