

New Proposal

Date Submitted: 11/05/21 5:21 pm

Viewing: : **Environmental Engineering,
BS**

Last edit: 02/07/22 11:16 am

Changes proposed by: Becky Stillwell

In Workflow

1. U Program Review
2. 1251 Head
3. KP Committee Chair
4. KP Dean
5. University Librarian
6. Provost
7. Senate EPC
8. Senate
9. U Senate Conf
10. Board of Trustees
11. IBHE
12. HLC
13. DMI

Approval Path

1. 11/08/21 10:00 am
Deb Forgacs (dforgacs):
Approved for U Program Review
2. 11/09/21 7:09 pm
John Popovics (johnpop):
Approved for 1251 Head
3. 01/25/22 1:44 pm
Brooke Newell (bsnewell):
Approved for KP Committee Chair
4. 01/25/22 1:45 pm
Candy Deaville (candyd):
Approved for KP Dean
5. 01/25/22 1:47 pm
John Wilkin (jpwilkin):

- Approved for
University
Librarian
6. 01/25/22 1:51 pm
Kathy Martensen
(kmartens):
Approved for
Provost
 7. 02/03/22 9:07 am
Barbara Lehman
(bjlehman):
Rollback to 1251
Head for Senate
EPC
 8. 02/07/22 10:31
am
John Popovics
(johnpop):
Approved for 1251
Head
 9. 02/07/22 11:22
am
Brooke Newell
(bsnewell):
Approved for KP
Committee Chair
 10. 02/07/22 2:12 pm
Candy Deaville
(candyd):
Approved for KP
Dean
 11. 02/07/22 3:05 pm
John Wilkin
(jpwilkin):
Approved for
University
Librarian
 12. 02/07/22 3:30 pm
Kathy Martensen
(kmartens):
Approved for
Provost

Proposal Type

Proposal Type:

Major (ex. Special Education)

Administration Details

Official Program Name	Environmental Engineering, BS	
Sponsor College	Grainger College of Engineering	
Sponsor Department	Civil and Environmental Engineering	
Sponsor Name	Ana Barros, Donald Biggar Willett Chair of Engineering, Head of Department	
Sponsor Email	barros@illinois.edu	
College Contact	Jonathan Makela, Associate Dean for Undergraduate Programs, Grainger College of Engineering	College Contact Email jmakela@illinois.edu
College Budget Officer	Tessa Hile	
College Budget Officer Email	tmhile@illinois.edu	

List the role for rollbacks (which role will edit the proposal on questions from EPC, e.g., Dept Head or Initiator) and/or any additional stakeholders. *Purpose: List here who will do the editing work if proposal needs rolled back. And any other stakeholders.*

Brooke Newell - GCOE

John Popovics, Assoc. Head - EPC questions and Rollback.

Jeremy Guest - Committee Chair - Questions from EPC

Megan Konar - Co- Committee Chair - Questions from EPC

Becky Stillwell - edits to proposal and rollbacks.

Does this program have inter-departmental administration?

No

Proposal Title

Effective Catalog Term	Fall 2022
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Provide a brief, concise description (not justification) of your proposal.

Environmental engineering is a profession that aims to achieve healthy, prosperous, and equitable communities while simultaneously maintaining the ecosystems that support them. The Bachelor of Science (B.S.) degree in Environmental Engineering (EnvE) seeks to provide rigorous and focused training at the intersection of the natural sciences and engineering fundamentals. This degree program is expected to be completed in eight semesters of full-time studies and will be offered by the Civil and Environmental Engineering Department (CEE) in the Grainger College of Engineering (GCOE). The proposed program will be distinguished by attributes that are not available together in any individual degree program in the UI System, in the state of Illinois, or in the nation, including (i) the integration of atmospheric sciences with infrastructure planning and design, (ii) the development of computational skills including mathematical techniques to work with environmental and temporal datasets, (iii) the incorporation of engineering design experience distributed across the curriculum, and (iv) the provision of concentration areas and coursework in emerging areas of critical importance in the 21st century. Specifically, students will gain core knowledge in math, science, and engineering and select a “primary” concentration within the B.S. EnvE program from among the following five alternatives: Public Health Engineering; One Water; Energy and Environmental Sustainability; Climate and Environmental Sustainability; and Water Systems and Sustainability.

List here any related proposals/revisions and their keys. *Example: This BS proposal (key 567) is related to the Concentration A proposal (key 145) and the Concentration B proposal (key 203).*

Program Justification

Provide a **brief** justification of the program, including highlights of the program objectives, and the careers, occupations, or further educational opportunities for which the program will prepare graduates, when appropriate.

Our society faces a broad range of challenges related to sustainable development while improving our quality of life. Environmental engineers must be prepared to address the increasingly complex and evolving challenges associated with population growth, urbanization, and changing environments. We offer four core motivations for the establishment of a B.S. in Environmental Engineering:

i) First, environmental engineering has a distinct body of knowledge [1] that is required for professional licensure (licensure is critical to environmental engineers' ability to practice and advance their careers), which is evidenced by environmental engineering disciplinary examinations for the Fundamentals of Engineering (FE) and Professional Engineering (PE) examination [2].

ii) Second, environmental engineering related-professions have grown rapidly in recent decades, and are associated with two of the three engineering occupations with the largest projected employment increases (as a percentage) through 2029 [3].

iii) Third, environmental engineering is the only engineering discipline for which 50% or greater of awarded B.S. degrees in the United States are awarded to women [4], and environmental engineering has been demonstrated to be of greater interest than civil engineering among middle school and high school students identifying as African American, Native American, Latino/a, Southeast Asian, and Caucasian [5].

iv) Fourth, the increasingly dynamic interactions between nature and society necessitate that environmental engineers receive targeted training in climate projections and climate change mitigation and adaptation [6].

We anticipate the establishment of the proposed EnvE B.S. degree program will support growth in undergraduate enrollment in the Department of Civil and Environmental Engineering by roughly 50 students per year, which is consistent (in terms of the ratio of student populations in B.S. Civil Engineering vs. B.S. Environmental Engineering) with peer institutions of similar size. It is natural that Illinois, as a world leader in civil and environmental engineering and atmospheric sciences, should seize the opportunity to conceive and launch the definitive educational program for training students to navigate the dynamic interactions between the natural and built environments in the planning and design of environmental infrastructure. Importantly, the depth and complexity of natural-built environment interactions and detailed design of agile infrastructures cannot be adequately addressed through current training programs in civil engineering (even with curricular specialization), as environmental engineering approaches require: (i) foundational knowledge in atmospheric sciences and other sciences (e.g., chemistry, microbiology, community health) and engineering disciplines (e.g., chemical and biomolecular engineering); and (ii) technological design thinking that is distinct from broader civil engineering applications, focusing on the management of natural resources and the protection and improvement of environmental (air, water, and soil) quality and human health. For a program in environmental engineering to succeed, it is also critical to rapidly and continuously adapt course materials and content to match the pace of the field (e.g., covering

bioaerosols, pathogen fate and transport, and wastewater epidemiology to combat pandemics), which is already standard practice by our faculty in Civil and Environmental Engineering. Currently, 24 CEE faculty members work actively in research directly relevant to core content of the proposed EnvE degree program, with 12 faculty specifically specializing in environmental engineering and 12 faculty specializing in water resources engineering. The CEE department has recently invested in new, state-of-the-art instructional facilities, which include a teaching laboratory and collaborative instructional spaces (including the new Civil and Environmental Engineering Building which opened in fall 2021) that will directly support the EnvE curriculum.

Students receiving a B.S. degree in EnvE will be uniquely trained in environmental engineering and the natural sciences and will be skilled in computational tools, climate adaptation and mitigation, and the design and advancement of environmental infrastructure and technologies. They will also be competent in analytical and computational approaches necessary for the analysis, planning, and design of environmental infrastructure and technologies. Graduates will thus be well positioned to pursue professional degree programs in engineering as well as diverse programs related to environmental policy, public health, and the natural sciences. The graduates will also be equally prepared to enter the industry as environmental or water resources engineers. The strong industrial growth supporting long-term availability and expansion of such positions is described in the Market Demand section presented below. The B.S. EnvE program is expected to attract a wide range of students who may have otherwise applied to B.S. EnvE programs at other institutions, both in the United States and abroad.

[1] American Academy of Environmental Engineers. Environmental Engineering Body of Knowledge; Annapolis, MD, 2009.

[2] National Council of Examiners for Engineering and Surveying (NCEES). Accessed July 16, 2021. <https://ncees.org/>

[3] U.S. Bureau of Labor Statistics. Employment Projections. Employment Percent Change 2019-2029. Accessed August 2, 2021. <https://data.bls.gov/projections/occupationProj>

[4] American Society for Engineering Education. Engineering and Engineering Technology by the Numbers 2019; Washington, D.C., 2020; p 89.

[5] Sandrin, S., & Borrer, C. M. (2013), Student Perceptions and Interest in Engineering: Effects of Gender, Race/Ethnicity, and Grade Level. Paper presented at 2013 ASEE Annual Conference & Exposition, Atlanta, Georgia. 10.18260/1-2—22487.

[6] Association of Environmental Engineering and Science Professors. Redefining Environmental Engineering and Science in the 21st Century; Washington, D.C., 2016; p 77.

Instructional Resources

Will there be any reduction in other course offerings, programs or concentrations by your department as a result of this new program/proposed change?

No

Does this new program/proposed change result in the replacement of another program?

No

Does the program include other courses/subjects impacted by the creation/revision of this program?

Yes

Required courses

ABE 436 - Renewable Energy Systems
ACE 310 - Natural Resource Economics
ATMS 201 - General Physical Meteorology
ATMS 202 - General Physical Climate
ATMS 305 - Computing and Data Analysis
CHBE 221 - Principles of CHE
CHBE 321 - Thermodynamics
CHEM 102 - General Chemistry I
CHEM 103 - General Chemistry Lab I
CHEM 104 - General Chemistry II
CHEM 105 - General Chemistry Lab II
CHEM 232 - Elementary Organic Chemistry I
CHEM 360 - Chemistry of the Environment
CHLH 201 - Public Health Research Methods
CHLH 274 - Introduction to Epidemiology
CHLH 469 - Environmental Health
CS 101 - Intro Computing: Engrg & Sci
ECE 316 - Ethics and Engineering
ENG 100 - Engineering Orientation
MATH 221 - Calculus I
MATH 231 - Calculus II
MATH 241 - Calculus III
MATH 257 - Linear Algebra w Computat Appl
MATH 285 - Intro Differential Equations
MCB 300 - Microbiology
ME 200 - Thermodynamics
PHYS 211 - University Physics: Mechanics
PHYS 213 - Univ Physics: Thermal Physics
SE 101 - Engineering Graphics & Design
TAM 211 - Statics
TAM 212 - Introductory Dynamics
GGIS 379 - Introduction to GIS
ENSU 301 - Soc Impacts Weather & Climate
ACE 100 - Intro to Applied Micro
ECON 102 - Microeconomic Principles

Explain how the
inclusion or
removal of the
courses/subjects
listed above

impacts the
offering
departments.

All required courses would see a potential influx of additional students each year, ranging in a particular class from 10 to 50 students. Letters of support from external departments that offer courses required for the EnvE degree are attached. Please note that GIS 379 was formally known as GEOG 379 (the letter references that instead).

Attach letters of support or acknowledgement from other departments. [Environmental Engineering BS Letters of Support FINAL.pdf](#)

Program Regulation and Assessment

Briefly describe the plan to assess and improve student learning, including the program's learning objectives; when, how, and where these learning objectives will be assessed; what metrics will be used to signify student's achievement of the stated learning objectives; and the process to ensure assessment results are used to improve student learning. (Describe how the program is aligned with or meets licensure, certification, and/or entitlement requirements, if applicable).

Educational objectives for the environmental engineering program reflect the mission of the Department of Civil and Environmental Engineering, the importance placed on successful professional practice, the ability to pursue advanced degrees, the assumption of professional and societal leadership roles, and a commitment to lifelong learning. University of Illinois B.S. in Environmental Engineering graduates will:

1. Successfully enter the environmental engineering profession as practicing engineers and consultants with prominent companies and organizations in diverse areas that include public health engineering, one water, energy and environmental sustainability, climate and environmental sustainability, and water systems and sustainability.
2. Pursue graduate education and research at major research universities in environmental engineering and related fields.
3. Pursue professional licensure.
4. Advance to leadership positions in their profession.
5. Engage in continued learning through professional development.
6. Participate in and contribute to professional societies and community service.

Assessment and student learning will be evaluated through the following:

- Instructor & Course Evaluation System (ICES): This course evaluation is completed at the end of each semester for students to assess faculty and teaching assistants. By collecting these responses through a period of 1, 3, and 5 years, we can evaluate what changes or improvements need to be made in the Environmental Engineering program.
- ABET Accreditation will provide assurance that the environmental engineering program is in line with the quality standards for which the program prepares graduates to enter the profession. This review will be provided every six years.
- Senior Surveys – will be implemented as the first class of graduates are preparing for graduation in May 2027 and each semester beyond. This method will provide data based on the ABET objectives and will enable the Department of Civil and Environmental Engineering to further assess student responses and determine the impact which the degree program provided to them.

Is the career/profession for graduates of this program regulated by the State of Illinois?

No

Program of Study

"Baccalaureate degree requires at least 120 semester credit hours or 180 quarter credit hours and at least 40 semester credit hours (60 quarter credit hours) in upper division courses" (source: <https://www.ibhe.org/assets/files/PrivateAdminRules2017.pdf>). For proposals for new bachelor's degrees, if this minimum is not explicitly met by specifically-required 300- and/or 400-level courses, please provide information on how the upper-division hours requirement will be satisfied.

All proposals must attach the new or revised version of the Academic Catalog program of study entry.

Contact your college office if you have questions.

For new [Environmental Engineering BS Side by](#)
programs, attach [Side Final February 2022.xlsx](#)
Program of Study

Catalog Page Text - Overview Tab

Text for Overview tab on the Catalog Page. This is not official content, it is used to help build the new catalog page for the program. Can be edited in the catalog by the college or department.

CEE Overview – Environmental Engineering, BS

Environmental engineers apply basic principles of science, supported by mathematical and computational tools, to address an important issue facing society: ensuring clean air, safe drinking water, and sanitation; evaluating opportunities and designing systems for sustainable environmental resource management; designing infrastructure and developing technologies to enable climate change mitigation and adaptation; protecting people from natural and man-made hazards; and designing sustainable infrastructure that benefits society.

The environmental engineering program comprises five focus areas (Public Health Engineering; One Water; Energy and Environmental Sustainability; Climate and Environmental Sustainability; and Water Systems and Sustainability). Although each area and program has its own special body of knowledge and engineering tools, environmental engineering projects often use knowledge and data from many of these topical areas together in order to address societal challenges. Brief descriptions of each focus area are provided below:

Public Health Engineering (PHE). Students in the PHE primary will gain skills in monitoring and modeling air pollution, air quality management, air, and water pollution control technologies, and physicochemical and toxicological analysis of environmental contaminants. Students will also learn the skills to analyze and evaluate the interconnections between environmental factors and the progression of human diseases through various designs of epidemiological studies and apply the principles of engineering control for the protection of public health.

One Water (OneW). The OneW primary centers on the safe and reliable provision of drinking water, sanitation, and stormwater management for communities and households. Students in this primary will learn physical, chemical, and biological principles and how to apply them to design and develop innovative water quality control processes and systems. Students will also learn how to design resource (water, nutrient, energy) recovery systems to support circular economies. The term “One Water” stems from an international trend toward holistic water planning by municipalities (e.g., “One Water LA” for the City of Los Angeles).

Energy and Environmental Sustainability (E2S). The E2S primary focuses on understanding, quantifying, and modeling the interdependencies between energy, water, and the environment. Students will gain fundamental and applied knowledge in thermodynamics and chemical principles, and expertise in water policy, renewable energy systems, and sustainable design.

Climate and Environmental Sustainability (CES). CES students will develop skills to quantify and manage the dynamic interactions among society and the built and natural environments, with an emphasis on environmental and water resources engineering to adapt to a changing global climate. Coursework will focus on atmospheric sciences (including physical climate and physical meteorology), natural resource economics,

environmental systems analyses, decision and risk analysis, and data science to generate insight from large and complex datasets.

Water Systems and Sustainability (WS2). The WS2 primary focuses on understanding, designing, and managing natural and engineered water systems. Students learn foundational knowledge of environmental hydrology and hydraulic engineering, and gain skills to develop sustainable solutions to urban water challenges such as flooding, to manage surface water and groundwater transport and pollution, and to design novel nature-based solutions and green and hybrid infrastructure to overcome the challenges imposed by a changing environment.

Across all focus areas, CEE's Program Education Objectives are to educate EnvE students to:

1. Successfully enter the environmental engineering profession as practicing engineers and consultants with prominent companies and organizations in diverse areas that include public health engineering, one water, energy and environmental sustainability, climate and environmental sustainability, and water systems and sustainability.
2. Pursue graduate education and research at major research universities in environmental engineering, and related fields.
3. Pursue professional licensure.
4. Advance to leadership positions in their profession.
5. Engage in continued learning through professional development.
6. Participate in and contribute to professional societies and community service.

Program Review and Approval

To qualify for the degree of Bachelor of Science in Environmental Engineering, each student's academic program plan must be reviewed by a standing committee of the faculty (the Program Review Committee) and approved by the Associate Head of Civil and Environmental Engineering in charge of undergraduate programs. This review and approval process ensures that individual programs satisfy the educational objectives and all of the requirements of the environmental engineering program, that those programs do not abuse the substantial degree of flexibility that is present in the curriculum, and that the career interests of each student are cultivated and served.

Statement for Programs of Study Catalog

Graduation Requirements

Minimum Overall GPA: 2.0

Minimum hours required for graduation: 128 hours

General education: Students must complete the Campus General Education requirements including the campus general education language requirement. **ECE 316** will satisfy an an Orientation and Professional Development

requirement, a Campus General Education Humanities requirement, and the Campus General Education Advanced Composition requirement.

Orientation and Professional Development

Course List

Code	Title	Hours
CEE 190	Project-Based Introduction to CEE	4
CEE 495	Professional Practice	0
ECE 316	Ethics and Engineering	3
ENG 100	Grainger Engineering Orientation Seminar (External transfer students take ENG 300 .)	1
Total Hours		8

Foundational Mathematics and Science

Course List

Code	Title	Hours
ATMS 202	General Physical Climate	3
CHEM 102	General Chemistry I	3
CHEM 103	General Chemistry Lab I	1
CHEM 104	General Chemistry II	3
CHEM 105	General Chemistry Lab II	1
MATH 221	Calculus I (MATH 220 may be substituted. MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	4
MATH 231	Calculus II	3
MATH 241	Calculus III	4
MATH 257	Linear Algebra with Computational Applications	3
MATH 285	Intro Differential Equations	3
PHYS 211	University Physics: Mechanics	4
Total Hours		32

Environmental Engineering Technical Core

Course List

Code	Title	Hours
CEE 201	Systems Engrg & Economics	3
CEE 202	Engineering Risk & Uncertainty	3
CEE 330	Environmental Engineering	3
CEE 331	Fluid Dynamics in the Natural and Built Environment (Fluid Dynamics in the Environment)	4
CEE 350	Water Resources Engineering	3
CEE 449	Environmental Engineering Lab	3
CEE 453	Urban Hydrology and Hydraulics	4
CS 101	Intro Computing: Engrg & Sci	3
SE 101	Engineering Graphics & Design	3
TAM 211	Statics	3
TAM 212	Introductory Dynamics	3
Total Hours		35

Primary Fields (Students choose one of five (5) Primary Fields)

Course List

Code	Title	Hours
	Energy & Environmental Sustainability Primary Field	30

Code	Title	Hours
ABE 436	Renewable Energy Systems	4
CEE 340	Energy and Global Environment	3
CEE 433	Water Technology and Policy	3
CEE 493	Sustainable Design Eng Tech	4
CHEM 232	Elementary Organic Chemistry I	3
CHEM 360	Chemistry of the Environment	3
ENSU 301	Soc Impacts Weather & Climate	3
ME 200	Thermodynamics	3
PHYS 212	University Physics: Elec & Mag	4
	Climate & Environmental Sustainability Primary Field	31
ACE 310	Natural Resource Economics	3
ATMS 201	General Physical Meteorology	3
CEE 340	Energy and Global Environment	3
CEE 434	Environmental Systems I	3
CEE 458	Water Resources Field Methods	4
CEE 491	Decision and Risk Analysis	3
CEE 492	Data Science for Civil and Environmental Engineering	3
ECON 102	Microeconomic Principles	3
	or ACE 100 Introduction to Applied Microeconomics	
GGIS 379	Introduction to Geographic Information Systems	4
PHYS 213	Univ Physics: Thermal Physics	2
	Water Systems & Sustainability Primary Field	32
ACE 310	Natural Resource Economics	3
ATMS 201	General Physical Meteorology	3
CEE 433	Water Technology and Policy	3
CEE 434	Environmental Systems I	3
CEE 450	Surface Hydrology	3
	or CEE 457 Groundwater	
CEE 451	Environmental Fluid Mechanics	3
CHEM 232	Elementary Organic Chemistry I	3
CHEM 360	Chemistry of the Environment	3
ECON 102	Microeconomic Principles	3
	or ACE 100 Introduction to Applied Microeconomics	
ENSU 301	Soc Impacts Weather & Climate	3
PHYS 213	Univ Physics: Thermal Physics	2
	Public Health Engineering Primary Field	30
ATMS 305	Computing and Data Analysis	3
CEE 435	Public Health Engineering	3
CEE 437	Water Quality Engineering	3
CEE 438	Science & Environmental Policy	3
CEE 441	Air Pollution Sources, Transport and Control	4
CHLH 201	Public Health Research Methods	3
CHLH 274	Introduction to Epidemiology	3
CHLH 469	Environmental Health	3
MCB 300	Microbiology	3
PHYS 213	Univ Physics: Thermal Physics	2
	One Water Primary Field	29-30

Code	Title	Hours
CEE 437	Water Quality Engineering	3
CEE 440	Fate Cleanup Environ Pollutant	3 or 4
or CEE 452	Hydraulic Analysis and Design	
CEE 442	Environmental Engineering Principles, Physical	4
CEE 444	Env Eng Principles, Biological	4
CHBE 221	Principles of CHE	3
CHBE 321	Thermodynamics	4
CHEM 232	Elementary Organic Chemistry I	3
CHEM 360	Chemistry of the Environment	3
PHYS 213	Univ Physics: Thermal Physics	2

Free Electives

Code	Course List Title	Hours
	<u>Additional course work, subject to the Grainger College of Engineering restrictions to Free Electives, so that there are at least 128 credit hours earned toward the degree.</u>	10-14
	Total Hours of Curriculum to Graduate	128

Corresponding Degree BS Bachelor of Science

Program Features

Academic Level Undergraduate

Does this major have transcripted concentrations? No

What is the typical time to completion of this program?
4 years

What are the minimum Total Credit Hours required for this program?
128

CIP Code 141401 - Environmental/Environmental Health Engineering.

Is This a Teacher Certification Program?
No

Will specialized accreditation be sought for this program?
No

Delivery Method

This program is available:

On Campus - Students are required to be on campus, they may take some online courses.

Institutional Context

University of Illinois at Urbana-Champaign

Describe the historical and university context of the program's development. Include a short summary of any existing program(s) upon which this program will be built.

Explain the nature and degree of overlap with existing programs and, if such overlap exists, document consultation with the impacted program's home department(s).

The Urbana-Champaign campus is home to a Department of Civil and Environmental Engineering that currently awards a B.S. in Civil Engineering. It is appropriate for the CEE department to serve as the functional home for a training program in environmental engineering, as the CEE department has been awarding Master of Science (M.S.) and Doctor of Philosophy (Ph.D.) degrees in Environmental Engineering in Civil and Environmental Engineering since 1972. In addition to core faculty specializing in environmental engineering and water resources, CEE faculty have long-standing collaborations with other Campus faculty with interests in atmospheric sciences, natural resource management, public health, process engineering, chemical engineering, and agricultural and consumer economics.

The CEE department currently offers B.S., M.S., and Ph.D. degrees in civil engineering, and M.S. and Ph.D. degrees in environmental engineering in civil engineering. Our Campus also offers a B.S. in Chemical Engineering, a B.S. in Agricultural and Biological Engineering, a B.S. in Natural Resources and Environmental Sciences, and a B.S. in Chemistry. Cross-college discussions have demonstrated support for the B.S. EnvE degree from these collaborating departments, as evidenced by the attached letters of support. The B.S. EnvE program will build on the existing B.S. in Civil Engineering program but will be modified to integrate basic sciences including atmospheric sciences and climate projections with infrastructure planning and design, to increase computational skill development including mathematical techniques to work with environmental and temporal datasets, and to design concentration areas and coursework in emerging areas of critical environmental and societal importance in the 21st century. In terms of course requirements, the proposed B.S. EnvE degree program is most similar to the B.S. in Civil Engineering. However, the B.S. EnvE curriculum is distinct to the B.S. in Civil Engineering and differs by 11 to 16 classes, depending on the primary area of concentration selected. We believe this new major will appeal to groups of high school students who may not have otherwise applied to civil engineering [5], we are optimistic about the opportunity to increase enrollments through this new program without negatively affecting or overlapping other programs within the University.

[5] Sandrin, S., & Borrer, C. M. (2013), Student Perceptions and Interest in Engineering: Effects of Gender, Race/Ethnicity, and Grade Level. Paper presented at 2013 ASEE Annual Conference & Exposition, Atlanta, Georgia. 10.18260/1-2—22487.

University of Illinois

Briefly describe how this program will support the University's mission, focus and/or current priorities. Demonstrate the program's consistency with and centrality to that mission.

The proposed degree program will support the strategic initiatives of the University and the GCOE. Foremost, the degree program addresses UIUC's mission to be a pre-eminent public research university through the development of a nation-leading undergraduate program in Environmental Engineering, which is expected to garner nationwide attention from students, researchers, and industry. We expect the program to catalyze the development of educational and research initiatives across campus, beginning with those departments directly collaborating in the B.S. EnvE primaries (in particular, the Departments of Atmospheric Sciences, Community Health, and Chemical and Biomolecular Engineering). We expect this novel degree program, and the strengthened relationships across campus that will result, to transform the educational experience of our students, putting them in a position to directly serve society by improving public health, reducing or eliminating water and air pollution, enabling resilient water and natural resource management, improving resource circularity, safely managing waste disposal, and avoiding waste production. Additionally, the program is expected to be of greater interest (relative to civil engineering and most other engineering disciplines) to female and underrepresented minority students, which will help the College of Engineering to increase their representation in the student body. Further, this degree program will contribute to the Illinois State Board of Education initiatives to provide all students with "educational opportunities to pursue high-wage, high-skill occupations leading to economic self-sufficiency" [7].

Additionally, the B.S. EnvE program aligns with broader campus and College initiatives, including:

- a) Institute for Sustainability, Energy, and Environment (iSEE);
- b) Center for One Health, College of Veterinary Medicine;
- c) The Carle Illinois College of Medicine; and
- d) The Center for Food Systems Security, The Center for Digital Agriculture, and The National Center for Supercomputing Applications.

[7] Gender Equity Advisory Committee (GEAC). Illinois State Board of Education.
<https://www.isbe.net/Pages/Gender-Equity-Advisory-Committee.aspx>

Admission Requirements

Desired Effective Fall 2023
Admissions Term

Provide a brief narrative description of the admission requirements for this program. Where relevant, include information about licensure requirements, student background checks, GRE and TOEFL scores, and admission requirements for transfer students.

Application processing at the freshman level will be administered by the Office of Undergraduate Admissions, with requirements commensurate with standards of Grainger College of Engineering.

Admission Requirements for Freshmen:

- The general admission requirements of the University apply
- Application fee
- Self-reported academic record (SRAR)
- English proficiency

International students must score at least 100 on the iBT version of the English as a Foreign Language test (TOEFL); or 7 on each section of the IELTS.

For more detailed information regarding application requirements and the application process, please visit the University of Illinois Admissions website at: www.admissions.illinois.edu.

Admission Requirements for Inter-College/Department Transfer Students and Engineering Undeclared Students (ICT/IDT/EU)

- Students originating outside of the Grainger College of Engineering who entered the University of Illinois Urbana-Champaign as first-time freshmen will be required to participate in the Engineering Undeclared Program to be reviewed for transfer into Environmental Engineering
- Engineering Undeclared and current University students should demonstrate an interest in the major by:
 - Earning grades of "B" or better in introductory courses such as CHEM 102, 103; CHEM 104, 105; MATH 221, 231; PHYS 211; and CS 101.
 - Maintain a cumulative and specialized GPA of 3.00 or higher
 - Successfully complete the ICT or IDT transfer application

Describe how critical academic functions such as admissions and student advising are managed.

The CEE curriculum committee will administer the EnvE B.S. program. This committee consists of tenured, tenure-track, and specialized faculty members in the Department of Civil and Environmental Engineering, including faculty members who are engaged in environmental engineering research and instruction. This committee will be responsible for making curricular decisions and responsible for managing the day-to-day aspects of the program.

Current CEE staff will assist with student recruitment, course scheduling, and articulations, student interactions, scholarships, transfers (agreements, criteria, and advising), registration, study abroad agreements, student exchanges, and other day-to-day business of running the program.

Number of Students in Program (estimate)

Year One Estimate 30

5th Year Estimate (or when fully implemented)

200

Estimated Annual Number of Degrees Awarded

Year One Estimate 0

5th Year Estimate (or when fully implemented)

50

What is the matriculation term for this program?

Fall

Budget

Will the program or revision require staffing (faculty, advisors, etc.) beyond what is currently available?

No

Additional Budget Information

Attach File(s)

Financial Resources

How does the unit intend to financially support this proposal?

We assert that the program can be fully supported from student tuition from increased population of CEE students brought by the EnvE degree opportunity, thus the unit will not need to financially support the program beyond this.

Will the unit need to seek campus or other external resources?

No

Attach letters of support

What tuition rate do you expect to charge for this program? e.g, Undergraduate Base Tuition, or Engineering Differential, or Social Work Online (no dollar amounts necessary)

We will be using the already established Engineering tuition differential rate.

Resource Implications

Facilities

Will the program require new or additional facilities or significant improvements to already existing facilities?

No

Technology

Will the program need additional technology beyond what is currently available for the unit?

No

Non-Technical Resources

Will the program require additional supplies, services or equipment (non-technical)?

No

Resources

For each of these items, be sure to include in the response if the proposed new program or change will result in replacement of another program(s). If so, which program(s), what is the anticipated impact on faculty, students, and instructional resources? Please attach any letters of support/acknowledgement from faculty, students, and/or other impacted units as appropriate.

Attach File(s)

Faculty Resources

Please address the impact on faculty resources including any changes in numbers of faculty, class size, teaching loads, student-faculty ratios, etc. Describe how the unit will support student advising, including job placement and/or admission to advanced studies.

The proposed teaching responsibilities will be met by the existing faculty in Civil and Environmental Engineering. There will be no impact on teaching loads for any civil and environmental engineering faculty, given that all of the classes are already taught or have been planned to be included in the faculty's teaching responsibilities. Twenty-four existing CEE courses may experience an increased enrollment, including six courses (CEE 190, 201, 202, 330, 350) that are core to the B.S. in Civil Engineering program. These courses currently have 30-180 enrolled students each year, and will only be moderately affected by the increase of up to 50 new EnvE students per year. Other elective courses currently offered by the department are expected to experience a modest and reasonable increase in enrollment (from ~10 to ~25) as they serve as requirements for one or two of the five EnvE primaries. With regard to student: faculty ratio and impacts on class size, it should be noted that although current undergraduate enrollment in CEE is ~600 students, recent years have seen CEE enrollments as high as 750 undergraduate students. Additionally, CEE has a large graduate population (600-750 students), including many graduate students who take 400-level CEE courses required in the proposed B.S. EnvE. Thus, the increase of 200 EnvE students by 2028 is expected to have only a limited impact on teaching resources with an expected increase in student: faculty ratio from approximately 21 to 24. The CEE Associate Head and Director of Undergraduate Studies will be responsible for allocating advising duties and for developing best practices for advising. The existing undergraduate advising staff in CEE will also advise the EnvE students. Engineering Career Services is expected to be the primary facilitator of job placement for Grainger Engineering students. It is anticipated that the majority of graduates will enter industry, consistent with the placement of B.S. in Civil Engineering graduates. Students may also matriculate to graduate programs, which is also consistent with current B.S. in Civil Engineering graduates. Advisement for graduate school and professional placement will be through Civil and Environmental Engineering faculty, with personalized faculty advising for which individual student career interests will be paired to those faculty most capable of offering depth of knowledge and opportunities.

Library Resources

Describe your proposal's impact on the University Library's resources, collections, and services. If necessary please consult with the appropriate disciplinary specialist within the University Library.

Current library resources, including collections and services, are sufficient to address the needs of this program revision.

Market Demand

What market indicators are driving this proposal? If similar programs exist in the state, describe how this program offers a unique opportunity for students:

The proposed B.S. EnvE program will support (i) educational attainment, (ii) high-quality credentials to meet economic demand, and (iii) integration of educational, research, and innovation assets. With regard to educational attainment, the program will bring the University of Illinois in line with the best of the 77 existing ABET-accredited B.S. in Environmental Engineering programs across 34 states and Puerto Rico. At present, there is only one ABET-accredited program in the State of Illinois (Northwestern University), and no B.S. in Environmental Engineering at any public university in the state. The degree program will provide students with high-quality credentials enabling them to enter the workforce and pursue licensure as Professional Engineers. Further, the development of the B.S. EnvE program will leverage the University's research and innovation assets to advance education through an integrated portfolio.

Explain how the program will meet the needs of regional and state employers, including any state agencies, industries, research centers, or other educational institutions that expressly encouraged the program's development.

Discuss projected future employment and or additional educational opportunities for graduates of this program. Compare estimated demand with the estimated supply of graduates from this program and existing similar programs in the state. Where appropriate, provide documentation by citing data from such sources as employer surveys, current labor market analyses, and future workforce projections.

(Whenever possible, use state and national labor data, such as that from the Illinois Department of Employment Security at <http://ides.illinois.gov/> and/or the U.S. Bureau for Labor Statistics at <http://www.bls.gov/>).

With regard to employment outlook, one of the main motivators for the development of the B.S. in Environmental Engineering degree is the market demand for students trained in this discipline. Environmental engineering related-professions have grown rapidly in recent decades, and are associated with two of the three engineering occupations (coded as 17-0000, Architecture and Engineering Occupations, by the U.S. Bureau of Labor Statistics) with the largest projected employment increases (as a percentage) through 2029 [3]. Specifically, the positions "Environmental science and protection technicians", "Environmental engineering technologists and technicians", and "Environmental engineers" are projected to increase by 8.4%, 7.5%, and 3.1%, respectively, from 2019-2029. Students trained in the B.S. EnvE program will be well positioned to pursue employment in any of these occupations, with potential employers in industry and government as well as opportunities in graduate school.

What resources will be provided to assist students with job placement?

For job placements, students will have access to Engineering Career Services. Additionally, the College of Engineering has two career fairs per year and the Department of Civil and Environmental Engineering hosts two additional career fairs per year. The CEE career fair, in particular, includes many environmental engineering firms which regularly hire students graduating from the Civil and Environmental Engineering Department.

If letters of

support are
available attach
them here:

EP Documentation

EP Control Number EP.22.084

Attach Rollback/Approval Notices [ep22084_email to sponsor_20220202.pdf](#)

This proposal requires HLC inquiry Yes

DMI Documentation

Attach Final Approval Notices

Banner/Codebook Name

Program Code:

Minor Code	Conc Code	Degree Code	Major Code
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Senate Approval Date

Senate Conference Approval Date

BOT Approval Date

IBHE Approval Date

HLC Approval Date

Effective Date:

Attached Document Justification for this request

Program Reviewer **Deb Forgacs (dforgacs) (09/28/21 4:05 pm):** Rollback: requested.

Comments

Brooke Newell (bsnewell) (10/19/21 5:45 am): Rollback: per request

John Popovics (johnpop) (10/30/21 10:12 am): Rollback: Rolled back to allow committee-recomended modifications to be made

Deb Forgacs (dforgacs) (11/01/21 5:26 pm): Rollback: Requested by unit.

Barbara Lehman (bjlehman) (02/03/22 9:07 am): Rollback: Rollback: See attached EP Documentation.

<u>Key</u>	
Degree Requirements	Hours
General education: Students must complete the Campus General Education requirements including the campus general education language requirement. ECE 316 will satisfy an Orientation and Professional Development requirement, a Campus General Education Humanities requirement, and the Campus General Education Advanced Composition requirement.	
Orientation and Professional Development	8
CEE 190: Project-Based Introduction to CEE	4
CEE 495: Professional Practice	0
ECE 316: Ethics and Engineering	3
ENG 100: Engineering Orientation (External transfer students take ENG 300.)	1
Foundational Mathematics and Science	32
ATMS 202: General Physical Climate	3
CHEM 102: General Chemistry I	3
CHEM 103: General Chemistry Lab I	1
CHEM 104: General Chemistry II	3
CHEM 105: General Chemistry Lab II	1
MATH 221: Calculus I (MATH 220 is appropriate for students with no background in calculus. 4 of 5 credit hours count towards degree.)	
Or MATH 220: Calculus	4
MATH 231: Calculus II	3
MATH 241: Calculus III	4
MATH 257: Linear Algebra with Computational Applications	3
MATH 285: Intro Differential Equations	3
PHYS 211: University Physics: Mechanics	4
Environmental Engineering Technical Core	35
CEE 201: Systems Engrg Economics	3
CEE 202: Engineering Risk Uncertainty	3
CEE 330: Environmental Engineering	3
CEE 331: Fluid Dynamics in the Environment	4
CEE 350: Water Resources Engineering	3
CEE 449: Environmental Engineering Lab	3
CEE 453: Urban Hydrology and Hydraulics	4
CS 101: Intro Computing: Engrg Sci	3
SE 101: Engineering Graphics Design	3
TAM 211: Statics	3
TAM 212: Introductory Dynamics	3
Primary Fields.	
Students choose one of five (5) primary fields.	
Energy & Environmental Sustainability Primary Field	30
ABE 436: Renewable Energy Systems	4

CEE 340: Energy and Global Environment	3
CEE 433: Water Technology and Policy	3
CEE 493: Sustainable Design of Eng Tech	4
CHEM 232: Elementary Organic Chemistry I	3
CHEM 360: Chemistry of the Environment	3
ENSU 301: Soc Impacts Weather & Climate	3
ME 200: Thermodynamics	3
PHYS 212: University Physics: Elec & Mag	4
Climate & Environmental Sustainability (CES) Primary Field	31
ACE 310: Natural Resource Economics	3
ATMS 201: General Physical Meteorology	3
CEE 340: Energy and Global Environment	3
CEE 434: Environmental Systems I	3
CEE 458: Water Resources Field Methods	4
CEE 491: Decision and Risk Analysis	3
CEE 492: Data Science for CEE	3
ECON 102: Microeconomic Principles	3
or ACE 100 Intro to Applied Microeconomics	
GGIS 379: Intro to GIS Systems	4
PHYS 213: Univ Physics: Thermal Physics	2
Water Systems & Sustainability Primary Field	32
ACE 310: Natural Resource Economics	3
ATMS 201: General Physical Meteorology	3
CEE 433: Water Technology and Policy	3
CEE 434: Environmental Systems I	3
CEE 450: Surface Hydrology	3
or CEE 457: Groundwater	
CEE 451: Environmental Fluid Mechanics	3
CHEM 232: Elementary Organic Chemistry I	3
CHEM 360: Chemistry of the Environment	3
ECON 102: Microeconomic Principles	3
or ACE 100 Intro to Applied Microeconomics	
ENSU 301: Soc Impacts Weather & Climate	3
PHYS 213: Univ Physics: Thermal Physics	2
Public Health Engineering Primary Field	30
ATMS 305: Computing and Data Analysis	3
CEE 435: Public Health Engineering	3
CEE 437: Water Quality Engineering	3
CEE 438: Science & Environmental Policy	3
CEE 441: Air Pollution Sources, Transport, and Control	4
CHLH 201: Public Health Research Methods	3
CHLH 274: Introduction to Epidemiology	3
CHLH 469: Environmental Health	3

MCB 300: Microbiology	3
PHYS 213: Univ Physics: Thermal Physics	2
One Water Primary Field	29-30
CEE 437: Water Quality Engineering	3
CEE 440: Fate Cleanup Environ Pollutant	3
or CEE 452 Hydraulic Analysis and Design	or 4
CEE 442: Environmental Engineering Principles, Physical	4
CEE 444: Environmental Engineering Principles, Biological	4
CHBE 221: Principles of CHE	3
CHBE 321: Thermodynamics	4
CHEM 232: Elementary Organic Chemistry I	3
CHEM 360: Chemistry of the Environment	3
PHYS 213: Univ Physics: Thermal Physics	2
Free Electives	
Additional Course work subject to the Grainger College of Engineering restrictions to Free Electives so that there are at least 128 credit hours earned toward the degree. (https://go.grainger.illinois.edu/FreeElectives)	10 - 14
Total Hours of Curriculum to Graduate	128

Popovics, John S

From: Maghirang, Ronaldo G
Sent: Tuesday, September 14, 2021 12:57 AM
To: Popovics, John S; Barros, Ana
Subject: RE: new CEE degree program

Dear John and Dr. Barros,

This is to acknowledge that we are aware of the proposed undergraduate degree program in Environmental Engineering. In addition, we should be able to accommodate 10 new students in ABE 436.

Best wishes on the proposed new program.

Sincerely,
Ronaldo

From: Popovics, John S <johnpop@illinois.edu>
Sent: Saturday, September 11, 2021 10:34 PM
To: Maghirang, Ronaldo G <ronaldom@illinois.edu>
Subject: new CEE degree program

Dear Ronaldo:

Here in the Civil and Environmental Engineering department we are proposing to develop a new separate undergraduate BS degree program that focuses specifically on environmental engineering -- as opposed to civil and environmental engineering, what we have now. As part of the process, we need to reach out to departments that may be affected by such a development. Once this new program is running (Fall 2022 at the earliest) we expect about 10 new students per year to be enrolled ABE 436 Renewable Energy Systems.

If you agree, could you please send me a letter that acknowledges this and affirms that this could be supported by your department? I would appreciate if this letter is addressed to the CEE Department Head Ana Barros.

Thanks very much for your consideration, and please let me know should you have any questions or concerns.

With best regards,
John

John S. Popovics, Ph.D., P.E.
Professor and Associate Head and Director of Undergraduate Studies
The University of Illinois at Urbana-Champaign
johnpop@illinois.edu
+1 217.244.0843 - voice



UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN

College of Agricultural, Consumer & Environmental Sciences

Department of Agricultural & Consumer Economics
326 Mumford Hall, MC-710
1301 W. Gregory Drive
Urbana, IL 61801

November 10, 2021

Ana P. Barros
Professor and Head
Department of Civil & Environmental Engineering
University of Illinois

Dear Dr. Barros,

The Department of Agricultural & Consumer Economics acknowledges that it has been informed that Civil and Environmental Engineering proposes to develop a new undergraduate BS degree program that focuses specifically on environmental engineering.

We support the development of this new program and further understand that it may lead to the enrollment of an additional 10 to 20 students per year in ACE 100, Intro to Applied Microeconomics, and in ACE 310, Natural Resource Economics.

Best wishes,

A handwritten signature in black ink, appearing to read 'A. Fox'.

Professor and Head



COLLEGE OF LIBERAL ARTS & SCIENCES

Department of Atmospheric Sciences
3070 Natural History Building, MC-104
1301 W. Green St.
Urbana, IL 61801-3070

September 16, 2021

Prof. John. S. Popovics
Department of Civil and Environmental Engineering
University of Illinois at Urbana-Champaign

Dear Prof. Popovics:

The Department of Atmospheric Sciences endorses the proposed new B.S. degree program focused on environmental engineering. In particular, we support the inclusion of the following courses as requirements for all or a subset of the students enrolled in the program:

- ATMS 201 (General Physical Meteorology)
- ATMS 202 (General Physical Climate)
- ATMS 305 (Computing and Data Analysis)

We anticipate that there will be sufficient capacity in this set of courses to accommodate your students. Please note for your planning purposes that ATMS 201 is traditionally offered in the Fall and Spring semesters, whereas ATMS 202 and 305 are traditionally offered only in the Fall semester. We assume that you are familiar with the pre- or co-requisites for these courses, which can be found on the Course Catalog.

Please keep us informed of the status of the degree program approval process and any changes to the timeline for program implementation.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Rob Trapp'.

Robert Jeffrey Trapp
Professor and Head
Department of Atmospheric Sciences



College of Liberal Arts & Sciences

Department of Chemical & Biomolecular Engineering
114 Roger Adams Laboratory, MC-712
600 S. Mathews Ave.
Urbana, IL 61801

September 22, 2021

Professor Ana Barros
Donald Biggar Willett Chair of Engineering
Department Head, Civil & Environmental Engineering

Dear Prof. Barros:

Regarding the Civil and Environmental Engineering department's plans to develop a new BS degree program focusing on environmental engineering, the department of Chemical & Biomolecular Engineering has reviewed the curriculum plan and fully supports the program. We understand that two Chemical & Biomolecular Engineering core courses, CHBE 221 and CHBE 321, will become part of the degree requirement for students in this program. These CHBE courses are offered every semester and can easily accommodate the estimated 10 students per year that will need to be enrolled.

Fostering collaboration between departments is a win for both our students and the University of Illinois, and we are pleased to be involved. Please don't hesitate to contact me if you need additional information. And keep me posted on the program's approval!

Regards,

A handwritten signature in black ink, appearing to read 'P. Kenis', with a long horizontal line extending to the right.

Paul J. A. Kenis, PhD
Elio E. Tarika Endowed Chair
Professor and Department Head

Sept. 3, 2021

Professor Ana Barros
Department of Civil and Environmental Engineering

Dear Professor Barros,

I am pleased to strongly support your Department's plan to start a new B.S. degree program in environmental engineering (as opposed to a combined civil + environmental engineering). Your Associate Head and Director of Undergraduate Studies, Professor John Popovics, has indicated this new program may lead to an increase in enrollment in our mainline general chemistry courses (Chem 102/103, 104/105, which are lecture/lab pairs) by approximately 50 students. We can handle this at present; but if enrollments grow significantly beyond this, we may reach out in the future to request support for an additional teaching assistant or two (laboratory sections usually have 1 TA/24 students).

I also indicated to Professor Popovics that we do offer the lecture course Chem 360, Chemistry of the Environment, which has a prerequisite of Chem 102-105 and one semester of organic chemistry (Chem 232 for nonmajors or Chem 236 for majors). Upon further discussion, it seems that there may be an additional 25 environmental engineering students enrolling in some combination of Chem 232/360 going forward. The Department of Chemistry can handle these additional loads at present as well, assuming we have access to large enough classrooms. I would be pleased to have further discussions with you about how our two departments can work together for the improvement of the student experience at the intersection of environmental engineering and chemistry.

Do let me know if you have any questions; I am best reached by email, murphycj@illinois.edu.

Best regards,



Catherine J. Murphy
Head, Department of Chemistry
Larry R. Faulkner Endowed Chair in Chemistry

Popovics, John S

From: Graber, Kim C
Sent: Tuesday, September 14, 2021 8:20 PM
To: Popovics, John S
Cc: Schwingel, Andiana; Jenkins, Julie Renee
Subject: RE: new degree program

John:

Please accept this message as confirmation that we welcome students in your program in our Community Health (CHLH) classes. CHLH 201 is taught each semester, CHLH 274 is taught either in-person or online (or in both formats) each semester, and CHLH 469 will be offered either in the fall or spring semester. If it would be helpful, once your program is approved, please contact Julie Jenkins, and we can make sure to hold seats back for your students.

Good luck with the proposal. It was nice speaking with you today. Please let me know if you require additional confirmation or if this e-mail will suffice.

Best wishes.

Kim

Kim C. Graber, Ed.D.
Professor and Interim Department Head
Department of Kinesiology and Community Health
University of Illinois
Freer Hall, 906 S. Goodwin Avenue
Urbana, IL 61801
(217) 333-2697 (office)
(217) 244-7322 (fax)
National Academy of Kinesiology Fellow #526
<https://ahs.illinois.edu/kinesiology>



Under the Illinois Freedom of Information Act any written communication to or from university employees regarding university business is a public record and may be subject to public disclosure.

From: Popovics, John S <johnpop@illinois.edu>
Sent: Tuesday, September 14, 2021 10:57 AM
To: Graber, Kim C <kgraber@illinois.edu>
Subject: new degree program

Dear Kim:

Here in the Civil and Environmental Engineering department we are proposing to develop a new separate undergraduate BS degree program that focuses specifically on environmental engineering -- as opposed to civil and environmental engineering, what we have now. As part of the process, we need to reach out to departments

that may be affected by such a development. Once this new program is running (Fall 2022 at the earliest) we expect about 10 new students per year to be enrolled in CHLH 201, CHLH 274, and CHLH 469.

If you agree, could you please send me a letter that acknowledges this and affirms that this could be supported by your department? I would appreciate if this letter is addressed to the CEE Department Head Ana Barros.

Thanks very much for your consideration, and please let me know should you have any questions or concerns.

With best regards,

John

John S. Popovics, Ph.D., P.E.

Professor and Associate Head and Director of Undergraduate Studies

The University of Illinois at Urbana-Champaign

johnpop@illinois.edu

+1 217.244.0843 - voice



DEPARTMENT OF COMPUTER SCIENCE

Thomas M. Siebel Center for Computer Science
201 N. Goodwin Ave.
Urbana, IL 61801-2302 USA

NANCY M. AMATO

Abel Bliss Professor and Head
2248 Siebel Center
namato@illinois.edu

September 17, 2021

Ana Barros
Donald Biggar Willett Chair of Engineering
and Department Head,
Civil & Environmental Engineering
Newmark Civil Engineering Laboratory, MC-250
205 North Mathews Ave.
Urbana, IL 61801-2352

Dear Professor Barros,

On behalf of the Department of Computer Science, I am happy to support the establishment of a new undergraduate degree in Environmental Engineering.

In particular, we support the inclusion of CS 101 as a required course in the degree program. The CS department should be able to absorb the anticipated addition of 50 students per year in this class.

We are very happy to support this exciting new degree program and wish it success.

Sincerely,

A handwritten signature in black ink that reads 'Nancy Amato'.

Nancy M. Amato
Abel Bliss Professor and Head
Department of Computer Science

September 23, 2021

Ana P. Barros
Professor and Head
Department of Civil & Environmental Engineering
University of Illinois

Dear Dr. Barros,

The Department of Electrical and Computer Engineering (ECE) acknowledges that it has been informed that Civil and Environmental Engineering proposes to develop a new undergraduate BS degree program that focuses specifically on environmental engineering.

ECE supports the development of this new program and will be ready to accommodate up to 25 students per semester from this program in ECE 316, Ethics and Engineering, offered every semester in a two section format with approximately 35 seats per section.

Sincerely,



Erhan Kudeki
Associate Head for Undergraduate Affairs
Department of Electrical and Computer Engineering
2080 ECEB, N. Wright St., Urbana, IL 61801
217-265-0128
erhan@illinois.edu



UNIVERSITY OF
ILLINOIS
URBANA-CHAMPAIGN

College of Liberal Arts & Sciences

Department of Economics
214 David Kinley Hall, MC-707
1407 W. Gregory Dr.
Urbana, IL 61801-3606

November 14, 2021

Dear Professor Barros,

This brief letter is to acknowledge our understanding about the new undergraduate major that the Department of Civil and Environmental Engineering is currently proposing. This new BS degree undergraduate program would be focused specifically on environmental engineering.

We have been notified that one of the classes that you would be interested in including in parts of the new program is ECON 102 (Microeconomic Principles). Our instructional capacity will be able to accommodate the approximately 20 students per year who are expected to take the class once the program is up and running.

Please let me know if I could be of help in any other way.

With best regards,

A handwritten signature in black ink that reads "George Deltas".

George Deltas
Professor and Head
Department of Economics

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

School of Earth, Society, and Environment

433 Natural History Building, MC-103
1301 W. Green Street
Urbana, IL 61801 USA



Phone: (217) 333-3440
Fax: (217) 244-6323

Dear Prof. Barros:

Regarding the Civil and Environmental Engineering department's plans to develop a new BS degree program focusing on environmental engineering, we understand that one of our courses, ENSU 301 Social Impacts of Weather & Climate, will become part of the degree requirement for some students in this program. We can accommodate the estimated 10 students per offering of ENSU 301, and furthermore we commit, through to AY 2024/25, that this number of environmental engineering students will be allowed enrollment to that course whenever it is offered. Please contact me should you have any questions or concerns about this commitment.

My regards,

A handwritten signature in black ink, appearing to read 'Jonathan Tomkin', written over a light gray rectangular background.

Dr. Jonathan Tomkin
Associate Director
School of Earth, Society, and Environment
University of Illinois
1301 W. Green Street
Urbana, IL 61801
Tel:(217) 244-2928 Fax:(217) 244-6323
tomkin@illinois.edu



College of Liberal Arts & Sciences

Department of Geography & Geographic Information Science
2042 Natural History Building, MC-150
1301 W. Green St.
Urbana, IL 61801

September 21, 2021

Dr. Ana P. Barros
Professor and Head
Department of Civil & Environmental Engineering
University of Illinois

Dear Dr. Barros,

The Department of Geography and Geographic Information Science acknowledges that it has been informed that Civil and Environmental Engineering proposes to develop a new undergraduate BS degree program that focuses specifically on environmental engineering.

We support the development of this new program and further understand that it may lead to the enrollment of an additional 10 students per year in GEOG 379: Introduction to Geographic Information Systems.

Best wishes for your program to achieve great success!

Sincerely,

A handwritten signature in black ink, appearing to read 'Shaowen Wang'.

Shaowen Wang
Professor and Head

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Department of Mathematics

273 Altgeld Hall, MC-382
1409 West Green Street
Urbana, IL 61801



September 17, 2021

Re: New BS in CEE

Dear Ana Barros, CEE Department Head,

The Mathematics Department is excited by the proposed new BS in Civil and Environmental Engineering with a stronger focus specifically on environmental engineering. We are happy to support the estimated 50 new students who will be enrolling in our Math 221, 231, 241, 257 and 285 courses during the course of their studies.

Sincerely

A handwritten signature in cursive script that reads "Randy McCarthy".

Randy McCarthy
Professor of Mathematics
Dir of Undergraduate Studies in Math
rmccrthy@illinois.edu

telephone 217-333-3350 • fax 217-333-9576
email office@math.uiuc.edu • url <http://www.math.uiuc.edu/>



COLLEGE OF LIBERAL ARTS & SCIENCES

School of Molecular & Cellular Biology
MCB Instructional Program
127 Burrill Hall, MC-119
407 S. Goodwin Ave.
Urbana, IL 61801

23 September 2021

John S. Popovics, Ph.D., P.E.
Professor, Associate Head, and Director of Undergraduate Studies
Department of Civil and Environmental Engineering
johnpop@illinois.edu

Dear Professor Popovics,

Thank you for your message regarding your proposed Bachelor's Degree in Environmental Engineering. The School of Molecular and Cellular Biology, is supportive of your proposal and agrees to allow up to 10 new students per academic year to be enrolled in MCB 300: Microbiology (3 cr. hr.). Best of luck with your new degree program!

All the best,

A handwritten signature in black ink that reads 'Melissa Michael'. The signature is fluid and cursive, with the first name 'Melissa' and last name 'Michael' clearly distinguishable.

Melissa Michael
Associate Director for Curriculum & Instruction
mmichae@illinois.edu
217-244-6238

CC: Milan Bagchi, Director, School of Molecular and Cellular Biology



THE GRAINGER COLLEGE OF ENGINEERING

Department of Physics
211 Loomis Lab, MC-704
1110 W. Green St.
Urbana, IL 61801-3003

September 22, 2021

Professor Ana Barros
Head of the Civil and Environmental Engineering Department
Newmark Civil Engineering Laboratory, MC-250
University of Illinois at Urbana-Champaign
205 North Mathews Ave.
Urbana, IL 61801-2352

Dear Professor Barros,

I write in response to your request for support from the Department of Physics in establishing a new degree in Environmental Engineering in CEE.

Physics will be able to support the additional enrollment from students in the new major that you project for three of our courses: 50 students annually for PHYS 211 and 213 as well as for PHYS 212 should you decide recommending 212 for students enrolled in the new program.

Best Wishes for the success of the new degree,

A handwritten signature in blue ink, appearing to read 'M. Grosse Perdekamp', with a stylized flourish at the end.


Matthias Grosse Perdekamp
Head, Department of Physics



THE GRAINGER COLLEGE OF ENGINEERING

Department of Industrial & Enterprise Systems Engineering
117 Transportation Building, MC-238
104 S. Mathews Ave.
Urbana, IL 61801-2925

TO: Ana Barros, CEE Department Head

FROM: Jeff Shamma, ISE Department Head 

DATE: September 7, 2021

SUBJECT: New CEE degree program in Environmental Engineering

In response to the email communication by Professor John Popovics on August 27, 2021, this memo is to confirm that ISE will be able to accommodate the anticipated additional enrollment (50 students per year) in SE 101 “Engineering Graphics & Design” in support of the proposed CEE degree program in Environmental Engineering.

27 September, 2021

Ana P. Barros
D.B. Willett Chair of Engineering, Department Head and Professor
Civil and Environmental Engineering

Dear Prof. Barros,

The Department of Mechanical Science and Engineering will support the Department of Civil and Environmental Engineering's request to allow B.S. degree students in the proposed Environmental Engineering program to take TAM 211, TAM 212 and ME 200 courses as part of their curriculum. It is our understanding that the proposed degree program will place an additional load of 50 or less students on each of the first two courses (that are mandatory), while placement in the last course that is an elective will be 10 or less. MechSE will work with the Grainger College of Engineering to develop resources to support these additional students.

Sincerely,



Sanjiv Sinha
Associate Head for Undergraduate Programs
Mechanical Science and Engineering

From: [Miller, Nolan H](#)
To: [Popovics, John S](#); [Newell, Brooke](#); [Barros, Ana](#)
Cc: [Konar, Megan](#); [Guest, Jeremy S](#); [Martensen, Kathy](#); [Lehman, Barbara J](#)
Subject: RE: Proposal for BS in Environmental Engineering
Date: Wednesday, February 2, 2022 2:28:39 PM
Attachments: [image001.png](#)

Hi John et al,

Thanks for this. It is very helpful and I think it should satisfy the subcommittee member's inquiry. Unfortunately, there was not time in Monday's meeting to get to this proposal, so it will be discussed, and I think voted on, in our next meeting, which is February 14. That's plenty of time to get it on the March Senate agenda.

One issue did come up regarding this proposal, and that is the statement in the Admissions Requirements section where it says that Standardized test scores are required. Apparently there is a new law in Illinois saying we can't require test scores for in-state applicants. I asked around in enrollment management and the provost's office, and they thought this could be an issue when the proposal gets to IBHE. One of the things we try to do is anticipate hiccups that could arise later in the approval process to make that go as smoothly as possible. So, since we have time, I'm going to ask that the proposal be rolled back to you to edit this language if you want. You could just delete the bullet point referring to standardized tests or else delete this whole part since you already say that Freshman admissions will be handled by the Office of Undergraduate Admissions:

Admission Requirements for Freshmen:

- The general admission requirements of the University apply
- Application fee
- Self-reported academic record (SRAR)
- Official test scores - Standardized test scores are required for admission review: either ACT (code 1154) or SAT I (code 1836) scores are accepted
- English proficiency

As long as the proposal is being rolled back, you could also attach the email chain below – your response to my question about whether the EES concentration is going to continue to be offered.

Thanks for your help on this. These changes will be fast, but you might as well wait until the end of this week or beginning of next to start the proposal back on its way to EPC, just in case anything else comes up. The non-Grainger steps in the approval process (Library, Provost) usually go pretty quickly, so as long as the proposal can get back out of Grainger quickly that should give us plenty of time.

Feel free to reach out if you have any questions.

Best,

Nolan

-- Kathy or Barb, please roll this back when you get a chance. Thanks, -- nm



NOLAN H MILLER

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Director, Center for Business and Public Policy

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Under the Illinois Freedom of Information Act any written communication to or from university employees regarding university business is a public record and may be subject to public disclosure.

From: Popovics, John S <johnpop@illinois.edu>

Sent: Monday, January 31, 2022 9:55 AM

To: Miller, Nolan H <nsmiller@illinois.edu>; Newell, Brooke <bsnewell@illinois.edu>; Barros, Ana <barros@illinois.edu>

Cc: Konar, Megan <mkonar@illinois.edu>; Guest, Jeremy S <jsguest@illinois.edu>; Popovics, John S <johnpop@illinois.edu>

Subject: RE: Proposal for BS in Environmental Engineering

Dear Nolan:

Thanks for your email and your help in assessing our program.

To answer your question - we are planning for the EES (environmental engineering and science) concentration within the B.S. in Civil Engineering to coexist with the new B.S. in Environmental Engineering. In making recommendations to students about which program to select, we plan to highlight the following differences:

B.S. in Civil Engineering with a primary in EES (Environmental Engineering and Science). This degree program centers on training well-rounded civil engineers, with a shared body of knowledge that includes courses in solid mechanics and exposure to at least five sub-disciplines of civil and environmental engineering (including transportation, construction, environmental, water resources, structural, and geotechnical engineering). Students who select this degree program will be well trained in the civil engineering body of knowledge and positioned to enter the workforce or continue their education to specialize in a sub-discipline of civil engineering or complementary field.

B.S. in Environmental Engineering. The concept for the B.S. in Environmental Engineering (EnvE) program is to have a similar structure to the B.S. in Civil Engineering, including the opportunity for students to select “primaries”. However, the B.S. EnvE will place greater

emphasis on understanding natural systems, computational skills in environmental and temporal datasets, and greater inclusion of technical content from other engineering departments and the natural sciences. For example, depending on the primary, these include courses from Atmospheric Sciences (ATMS), Chemical and Biomolecular Engineering (CHBE), Chemistry (CHEM), Geography (GEOG), and Molecular and Cellular Biology (MCB), among others. Students who select this degree program will be well trained in the environmental engineering body of knowledge and positioned to enter the workforce or continue their education.

Please let us know if that is unclear or if you have any additional questions.

Many thanks,

John

John S. Popovics, Ph.D., P.E.

Professor and Associate Head and Director of Undergraduate Studies

The University of Illinois at Urbana-Champaign

johnpop@illinois.edu

+1 217.244.0843 - voice

From: Miller, Nolan H <nmiller@illinois.edu>

Sent: Friday, January 28, 2022 4:06 PM

To: Newell, Brooke <bsnewell@illinois.edu>; Barros, Ana <barros@illinois.edu>

Cc: Popovics, John S <johnpop@illinois.edu>; Konar, Megan <mkonar@illinois.edu>; Guest, Jeremy S <jsguest@illinois.edu>

Subject: Proposal for BS in Environmental Engineering

Hello,

I'm the subcommittee chair handling the proposal for the new BS in Environmental Engineering for the Senate Education Policy Committee. We just got the proposal, but it seems to be in good order and I may try to get it discussed/passed at Monday's meeting. The up side of doing that if we can get it passed on Monday then we can get it on the February Senate agenda. Otherwise, it will have to wait until March.

So far, no serious concerns have been raised. I did get one request for additional information, though. Does the department plan on continuing to offer the environmental engineering and

science focus area in the Civil Engineering BS, or will this new degree replace it? If the two are going to coexist, how should students decide which path to take?

If I get any additional questions over the weekend, I'll forward them to you ASAP. If for some reason something arises that we can't settle before Monday, then we'll definitely get this passed in time to make the Senate agenda in March.

Best,

Nolan



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