

**Senate of the Urbana-Champaign Campus**

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**PROPOSAL TITLE:**        **Sustainability General Education**

**AUTHOR:**    Jessica Nicholson

**CONTRIBUTORS:**    Sustainability Gen Ed Working Group, ISG Committee on Environmental Sustainability, iSEE, iCap Education iCAP Team, Gen-Ed Board Working Group

**COMMITTEE SPONSOR:**    (Educational Policy, Campus Operations, or Senate Executive Committee)

**DESCRIPTION OF PURPOSE**

Ensuring the well-being of our present and future generations is a large, complex and interdependent challenge that requires sustainability-based technological, social, and economic changes. It is more important than ever for our society to implement sustainable practices that preserve our environmental resources, distribute them equitably, and combat increasingly evident issues such as excessive pollution, resource overuse, and socially irresponsible practices. Rapid environmental changes due to these problems have caused subsequent issues, particularly climate change and other detrimental effects to environmental and human well-being in many communities. These effects are becoming increasingly evident and require work within all industries and circles of influence to reverse. This means that students in all fields of study at our university can benefit from sustainability education to contribute to the improvement of our environmental state. UIUC provides over 500 courses across 50+ departments related to sustainability, energy conservation and environmentalism, demonstrating that we already have many of the resources needed to implement increased sustainability education. Several schools have implemented a university-wide gen-ed or program for courses related to sustainability as shown with a list in the Appendix. The University of Illinois at Urbana-Champaign, however, has no university-wide sustainability course gen-ed. The need for increased sustainable practices and changes in industry are more relevant now than ever. We must prioritize these needs, and one of the best ways to do so is to educate students who will go on to make significant changes

within their industries and circles of influence. General Education requirements can change to accommodate issues that arise in the changing social, economic and ecological environment. The Sustainability Gen-Ed described in this proposal supports a vision to apply conceptual classroom learning along with personal experiences to provide an understanding of the impact of individual and industry-based actions on complex, real-world issues in the realm of sustainability.

## **PROPOSED MOTION TO CREATE GEN-ED**

Let it be resolved that the University will give students in all undergraduate degree programs the option to take a 3-credit-hour gen-ed that explores questions and solutions to sustainability challenges and opportunities with relation to students' respective fields of study. This 3 credit-hour gen-ed will be a subset of the Natural Sciences and Technology general education category. Of the 6 credit hours students must take in this category, students will choose between courses in physical sciences, life sciences, and **sustainability via this proposal**. Course Explorer will list recommended courses based on a course list designated to fulfill this Sustainability General Education section. The General Education Board will work to approve courses for this list that add to an initial set of courses under consideration; the curated course list provided on page \_ of this proposal. Faculty will also have the opportunity to submit their courses for approval or create new courses that fulfill this gen-ed.

## **SUPPORT AND RATIONALE**

Due to its growing relevance, many current sustainability movements express the need for more widespread, established sustainability education. The UN developed their 17 sustainability goals in 2015 to address several sustainability-based challenges, and our University has pledged to take action to fulfill the Illinois Climate Action Plan.

The Education Objectives section (pages 124 to 139) of the Illinois Climate Action Plan outlines the need for more formal sustainability education, stating that “The multidisciplinary principles of sustainability should permeate higher education curricula. All fields — from engineering to behavioral sciences, economics to the fine arts — can be brought into the 21st century through synthesis with environmental topics.” This section goes on to share the three distinct, desired sustainability outcomes listed above as developed by the Illinois Faculty Coalition. Each desired outcome encompasses many multidisciplinary, sustainability-related principles; educational topics that are essential to equipping students with the skills needed to reach a better climate state and a more equitable society. This Sustainability Gen-Ed addition would ensure that all students

benefit from the many courses offered by our university that teach sustainability topics meant to achieve these outcomes.

Many universities have already implemented similar programs that require some level of sustainability-focused education for all undergraduate students. These schools are listed in the Appendix, along with links that detail the program(s) they offer. Educational priorities change over time as our society progresses and must adapt to current situations, so these schools have taken this step to expand their sustainability education and provide undergraduates with the knowledge they need to apply sustainable principles in their careers and everyday lives. Our University must take this same step to stay on pace with the changing needs of our society.

The February 2022 STARS report for UIUC shows that we have a curriculum rating of 28.31 out of 40. Our biggest need for improvement is in the Academic Courses category, but with this gen-ed, we will have greater enrollment in our sustainability courses. This gen-ed will encourage the creation and approval of new sustainability-focused courses, which can increase our sustainability gen-ed course offerings and the Academic Courses rating in the Curriculum section of our STARS report.

**Academics**

Curriculum <span>+</span>		28.31 / 40.00
Credit	Status	Points
Academic Courses	✓ Complete	4.31 / 14.00
Learning Outcomes	✓ Complete	8.00 / 8.00
Undergraduate Program	✓ Complete	3.00 / 3.00
Graduate Program	✓ Complete	3.00 / 3.00
Immersive Experience	✓ Complete	2.00 / 2.00
Sustainability Literacy Assessment	✓ Complete	2.00 / 4.00
Incentives for Developing Courses	✓ Complete	2.00 / 2.00
Campus as a Living Laboratory	✓ Complete	4.00 / 4.00

Before our initial resolution passed through the Illinois Student Government, we conducted a random-sample student survey to gauge student awareness of environmental issues, level of education on environmental topics, and opinions on whether or not a Sustainability Gen-Ed addition would have a positive impact. 1 corresponds to “Strongly Disagree” while 4 corresponds to “Strongly Agree.” Our survey gained 464 Responses and the charted results are shown in Appendix E. We found that many students feel they are aware of the critical state of climate change, yet a significant portion feel uneducated on how they can make an

environmentally sustainable impact within their field of study. 43.1% of students are unaware of the 500+ courses relating to sustainability at our university. Most importantly, however, 91.2% of students who responded either agree or strongly agree that a Sustainability Gen-Ed would have a positive impact.

## **SUSTAINABILITY EDUCATION DEFINITION AND TOPICS**

This gen-ed will be accompanied by a sustainability definition in the context of Natural Sciences to express the purpose and educational goals of our listed courses. We want students to understand the opportunities that these sustainability general education courses can provide with experience in personal, day-to-day, and professional sustainable practices. This definition also provides a foundation to identify courses that qualify to fulfill this gen-ed.

Natural science sustainability is an examination of anthropogenic ecological change, local and global ecosystem functioning and restoration, resource (particularly non-renewable) identification and extraction, and/or our technological response to aforementioned concerns. Technological examples include efficiency of resource consumption, waste reduction, and pollution abatement.

The United Nations Educational, Scientific, and Cultural Organization has created an official definition in regards to **Education for Sustainable Development** that fits the goals of our gen-ed and sets the precedent for learning outcomes that can be applied to our sustainability-focused courses:

“Education for Sustainable Development empowers learners of all ages with the knowledge, skills, values and attitudes to address the interconnected global challenges we are facing, including climate change, environmental degradation, loss of biodiversity, poverty and inequality. (remove poverty, inequality for Natural Sciences? Find mentions of definition and ensure consistency) Learning must prepare students and learners of all ages to find solutions for the challenges of today and the future. Education should be transformative and allow us to make informed decisions and take individual and collective action to change our societies and care for the planet. Education for Sustainable Development is recognized as an integral element of Sustainable Development Goal 4 on quality education and is a key enabler of all other SDGs.”

We will reference these definitions in conjunction with the sustainability gen-ed option and ensure that they accurately define each course that fulfills our gen-ed. This definition lists some

topics within the realm of sustainability that are valuable to sustainable development when implemented in education. In the interest of compatibility with the Natural Science and Technology gen-ed category, however, we only present some of these as educational topics our Sustainability Gen-Ed courses must focus on and our learning outcomes are based upon. In addition to the topics from both definitions, this list includes additional topics that courses can focus on to be a qualifying candidate for the sustainability gen-ed.

#### Educational Topics for Courses Fulfilling this Gen-Ed:

- Climate change
  - Growing prevalence of extreme weather events and rising average temperatures
  - Impact on industries
  - Technological and infrastructure adaptation to changing climate
- Environmental degradation, ecosystem disruption, changes, and resilience
  - Expansion and habitat loss
  - Endangerment of species and loss of biodiversity
  - Chemical, water, and air pollution
  - Impact on food supply
- Resource conservation and consumption
  - Reducing food waste
  - Recycling systems, infrastructure, industry
  - Reusable, reliable, and efficient products
- Human and natural ecologies / Human interaction with the ecosystem
  - Causes of food waste
  - Environmental conservation
  - Optimizing production for minimal environmental impact
  - Pesticide use
- Technological solutions to environmental problems
  - Renewable, emission-free energy
  - Carbon capture and afforestation
  - Fuel solutions
  - Hydrogen fuel cells
  - Electric vehicles and appliances
  - Energy efficiency

To extend the application of these broader topics, one or more of a courses' educational units must fall within at least one of the UN Sustainability Goals listed below in order to qualify as a course that fulfills the Sustainability Gen-Ed. While each of the 17 goals are important, these goals in particular are critical to our gen-ed in the context of Natural Sciences and Technology.

Courses that qualify for our gen-ed must correlate to at least one goal from this list. The full set of 17 goals can be found in the References section of the Appendix.

UN Sustainable Development Goals as Educational Categories for this Gen-Ed:

- 2. Zero Hunger
- 3. Good Health and Well-Being
- 4. Quality Education
- 6. Clean Water and Sanitation
- 7. Affordable and Clean Energy
- 9. Industry, Innovation, and Infrastructure
- 11. Sustainable Cities and Communities
- 12. Responsible Consumption and Production
- 13. Climate Action
- 14. Life Below Water
- 15. Life on Land

## **GEN-ED GUIDELINES AND LEARNING OUTCOMES**

Each course that fulfills our gen-ed must accomplish one or more of the proposed set of learning outcomes listed here. Of the five core learning outcomes established by the university, the fifth learning outcome aligns with the goals of our sustainability gen-ed.

### 5. Global Consciousness

Definition: Illinois students will discover how complex, interdependent global systems—natural, environmental, social, cultural, economic, and political—affect and are affected by the local identities and ethical choices of individuals and institutions.

The iCap goals listed here are also outcomes for our gen-ed courses. This proposal was not created to fulfill the iCap, but it is a step towards achieving these outcomes. Many of these outcomes align with the Natural Sciences category. While a few do not, they are still critical to the sustainability sub-category as a gen-ed.

## **SUSTAINABILITY IN DAY-TO-DAY LIFE**

1. Students will learn ways in which natural resources are used to produce what they consume, such as the food they eat, the water they drink, and the energy they use.

2. Students will understand ways in which their lifestyle and well-being are interconnected with those of diverse producers and consumers around the world, including impoverished communities.

#### SUSTAINABILITY KNOWLEDGE AND SKILLS

3. Students will learn core concepts of ecology and develop skills relevant to their chosen field to provide a basis for environmental sustainability.
4. Students will learn to think holistically about sustainability using perspectives across multiple disciplines.

#### SUSTAINABILITY AS A PERSONAL VISION

5. Students will understand relationships between global environmental and economic trends and their impact on diverse cultures and communities.
6. Students will develop an integrated vision for sustainability that embraces their personal lives, professions, local communities, and the world-at-large.

Apart from the iCap educational outcomes, these additional learning outcomes are specific to the sustainability gen-ed.

#### SUSTAINABILITY IN DAY-TO-DAY LIFE

7. Students will apply this knowledge in managing their resources to reduce their personal consumption and carbon footprint.
8. Students will understand how their presence impacts the ecosystem around them and how to interact with natural spaces.

#### SUSTAINABILITY KNOWLEDGE AND SKILLS

9. Students will be able to identify unsustainable practices and use their position(s) at their organization(s) to develop a more sustainable operation.

#### SUSTAINABILITY AS A PERSONAL VISION

10. Students will recognize the opportunities available to them to engage in advocacy for sustainable policies, practices, technology and more.

The Natural Sciences and Technology section of the Guidelines for General Education Courses must be amended after line 237 to include a new paragraph 4.3 for sustainability courses. The current paragraph 4.3 will become 4.4. Below is the proposed addition:

4.3 To be approved for General Education credit, a course in Sustainability (a) must be an introductory course which presents (or has as a prerequisite a college course that presents) the fundamentals of systems, systems thinking and the interaction of systems, including human-environment interactions, climate processes, energy generation and consumption, and ecology; and (b) should emphasize scientific methodology by involving the student in making observations, evaluating data, and solving problems. The course may be one required for majors in sustainability and technology or a course designed for non-specialists; courses designed for non-specialists should include coverage of the relationship of sustainability to human and environmental problems.

## **LIST OF COURSES TO FULFILL GEN-ED**

UIUC offers many courses that focus on sustainability, energy and environment over multiple semesters. A substantial summary of these courses can be found on iSEE's course page shown in the References section that includes a comprehensive list of 548 identified courses. Many courses in this list do not require prerequisites and are eligible to fulfill our proposed gen-ed. We have filtered this list, however, to reflect courses that can fulfill our gen-ed while aligned with Natural Sciences and Technology. This filtered list is a starting point for the Gen Ed Board to approve courses that fulfill this gen-ed.

Filtered list of courses to fulfill this Gen-Ed within Natural Sciences and Technology:

<https://docs.google.com/spreadsheets/d/1M9OOfgdTmPjnZOOMaeyrEKCZEuWzyxhx/edit?usp=sharing&ouid=101372498739058214439&rtpof=true&sd=true>

548 Sustainability-Focused Courses offered since 2017:

<https://drive.google.com/file/d/1SB0qPkxWRDHDzY1rmJc0xgzTE6LuYhPk/view?usp=sharing>

## **CURRENT COURSE CAPACITY AND EXPECTED DEMAND**

Most courses from our list have sufficient data to perform an analysis on course capacity, current demand, and expected demand. This course list below contains many of the courses listed in our filtered list above and is used in the subsequent analysis.

<https://docs.google.com/spreadsheets/d/15g6UmTj2gmW8T1L477oBW6gngRPiFFel/edit?usp=sharing&ouid=101372498739058214439&rtpof=true&sd=true>



These charts and analysis provide a comprehensive look into the current course capacity among sustainability-focused courses, occupied capacity, and expected undergraduate demand for these courses once this gen-ed proposal is implemented. Figure 1 shows the distribution of our listed sustainability-focused courses between Colleges, while Figure 2 shows the types of courses within our list. We see that these courses are distributed across multiple colleges. Most are lecture-based courses, which is ideal among gen-ed courses.

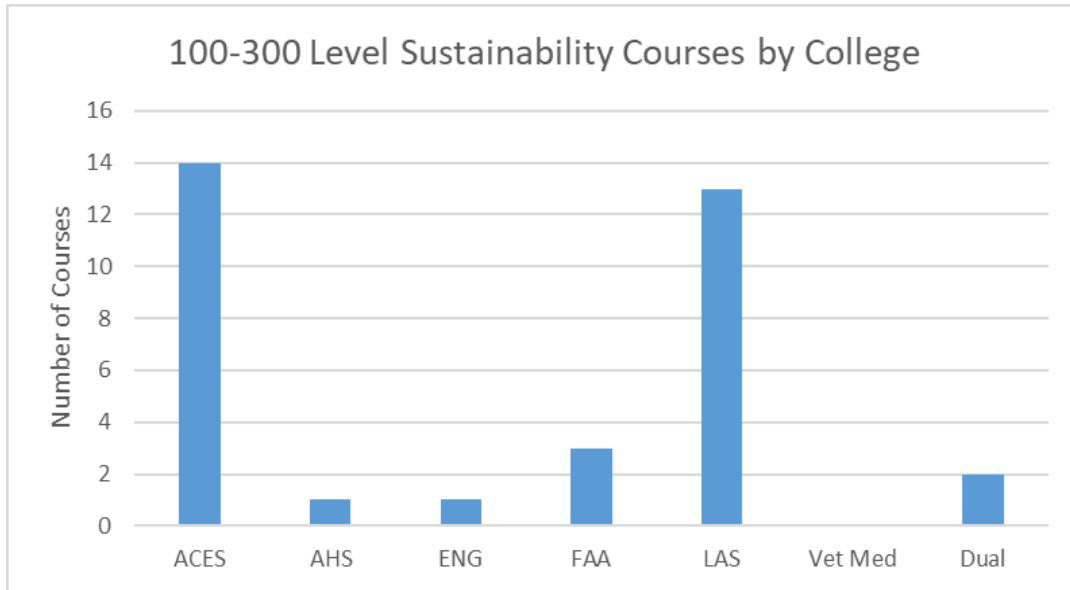


Figure 1

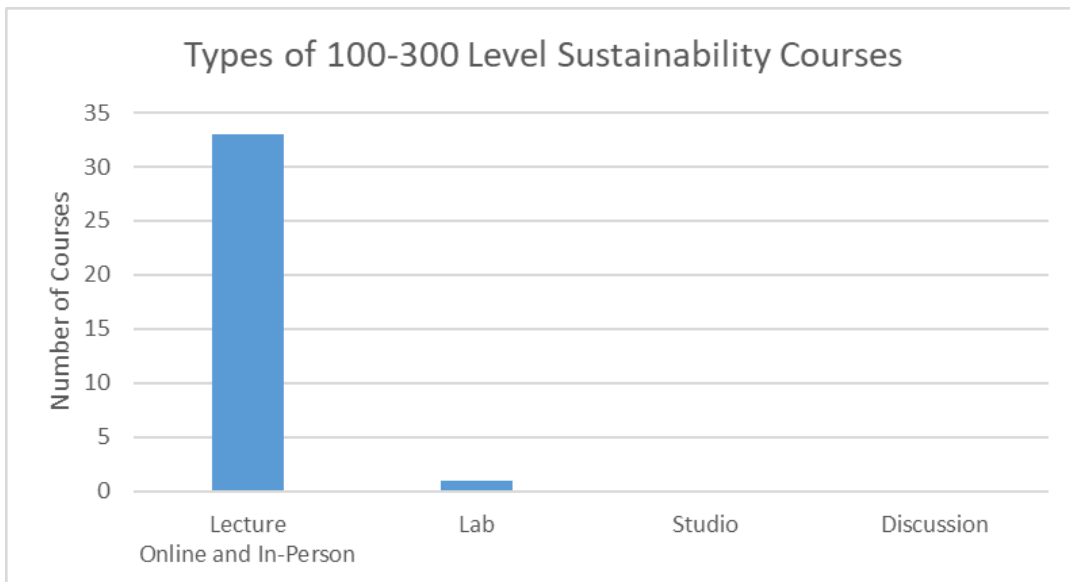


Figure 2

Figure 3 below shows the course capacity of all of our listed courses versus the enrollment in these courses for the 2020-2021 academic year. This is divided into Total capacity vs enrollment, but also separated by 100, 200, and 300 level courses. 100 and 200 level courses are most ideal as gen-ed courses, so these capacity numbers are the most relevant.

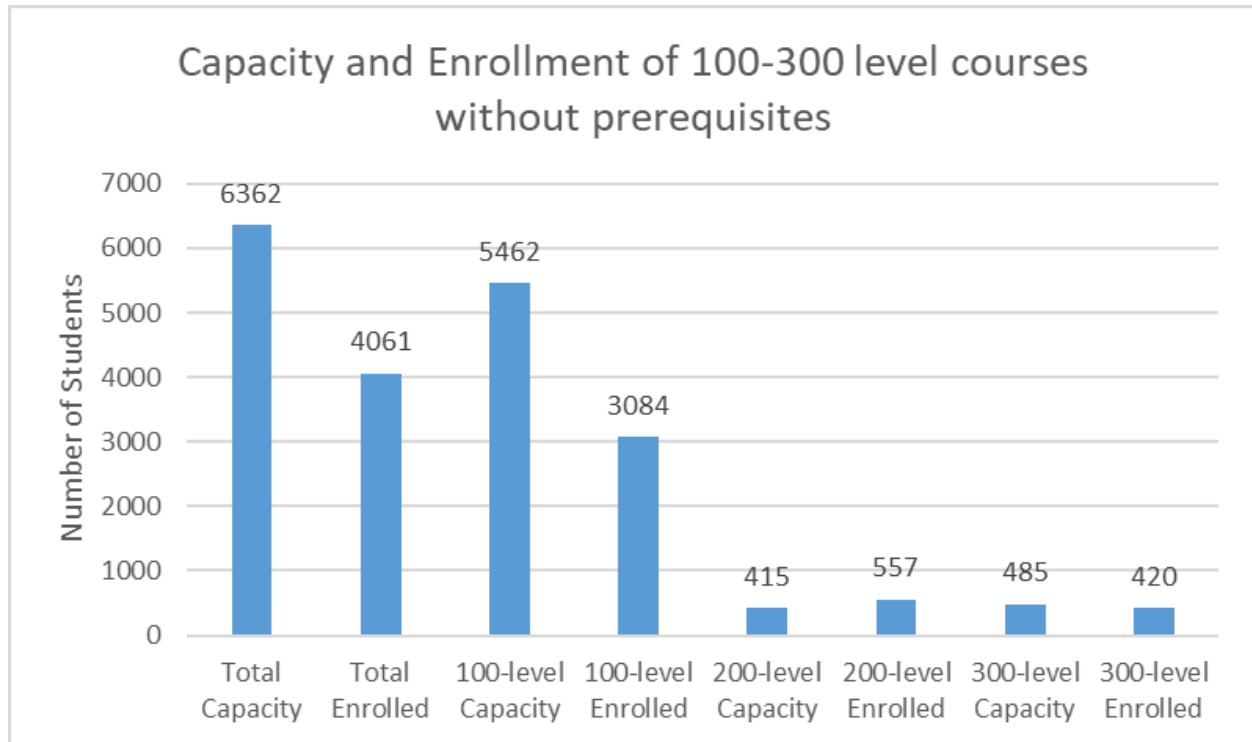


Figure 3

Our Sustainability Gen-Ed will become one of three categories within Natural Sciences and Technology, so all undergraduate students will pick two of these three categories to fulfill their 6 credit-hour requirement. We therefore project that a number of undergraduates within a range averaging 2/3rds of these students will choose to take a course from the Sustainability Gen-Ed category during one semester of their approximately 4-year undergraduate period. We understand that this is a loose assumption, however, and many factors including student preferences and course availability can influence the actual proportion of students choosing this option. Regardless, this is the best assumption we can make before we are able to gauge student preferences by measuring course enrollment once the gen-ed is implemented.

The total capacity of our filtered course list is 6,362 students as shown by Figure 3. The actual enrollment in these courses during a given academic year is 4,061, for a proportion of 0.638 representing the capacity filled. UIUC's undergraduate enrollment is steadily rising with the

2020 enrollment reaching 34,529 students. 4,061 undergraduates were enrolled in one of the sustainability-focused courses on our list during one academic year, so over a course of four years, the student enrollment in these courses would be about 16,244. This means that the proportion of undergraduate students who will take at least one of these courses is about 0.47. We can then factor in the average assumption that 2/3rds, or 0.67 of students will take one or more of these courses during their four years once our Sustainability Gen-Ed is implemented within Natural Sciences. When our proportion rises from 0.47 to 0.67, we have a projected demand of 23,019 students that would be ideal for our course capacity to match. This is the demand over approximately four years because it is calculated as a proportion of the total undergraduate enrollment. For one academic year, the projected demand is 5,754.75.

This demand remains beneath the course capacity in our short list. While it is under, we must expect that the demand might be slightly higher than the projected demand because this demand only takes into account the students who will take these courses to fulfill the Gen-Ed. It does not consider the students who already take these courses out of choice or due to their program.

We expect that multiple other courses will be approved to fulfill the Sustainability Gen-Ed and therefore increase the available capacity. Students also choose to take a course from this category within Natural Sciences, so they have the option to choose from another of the categories in the event of inadequate capacity. This will provide time as needed to identify, create, and approve more Sustainability Gen-Ed courses once the category is implemented.

## **FUTURE OF THE GEN-ED**

While this proposal is a significant addition to the options students have regarding sustainability education, it adds only an elective subset to the Natural Sciences and Technology general education category. This ensures that the sustainability option does not replace any existing general education requirements nor adds additional general education hours for students to complete. Instead, students will choose 2 courses from the 3 subsets within Natural Sciences and Technology in order to fulfill the 6 credit-hour requirement; Physical Sciences, Life Sciences, and **Sustainability via this proposal**. We anticipate that this proposal will significantly increase enrollment in the many sustainability courses offered by our campus as shown by the course capacity and expected demand analysis. It will also encourage creation of new courses that cover critical sustainability topics.

Implementation of this proposal will ensure that the University develops a strong foundation of course offerings in sustainability education that provide students with ample opportunities to take

such courses. Our ideal final step is to build on this proposal by transitioning this gen-ed option to a stand-alone sustainability requirement. This proposal will have a significant impact, but it is also a step towards this stand-alone requirement due to the course structure we build by implementing this current proposal.

Several steps are necessary to achieve to a stand-alone requirement:

1. Pass this proposal for a sustainability option in the Natural Sciences gen-ed category
2. Propose and create a sustainability option in the Social Sciences gen-ed category
  - a. Will open our university's sustainability general education to additional topics related to social challenges within sustainability
3. Allow demand to spur the creation and approval of new sustainability gen-ed courses, measure progress
4. Once significant sustainability course structure exists, and we have data describing demand and utilization of this option, we would consider revision towards a stand-alone sustainability gen-ed

## **APPENDICES**

### Appendix A: Illinois Student Government Procedural Background

This Proposal was initially passed as a resolution through the Third Assembly of the Illinois Student Government.

#### **Header Details:**

**RES.03.35**

**SENATE OF THE ILLINOIS STUDENT GOVERNMENT**

**OCTOBER 30, 2019**

**3<sup>RD</sup> ASSEMBLY**

**AUTHOR(S):** Committee on Environmental Sustainability Chair Bugra Sahin, Senator Dana Yun, Senator Jessica Nicholson

**SPONSOR(S):** Senator Eleena Ahmed, Senator James Kosmopoulos, Senator Deniz Namik, Senator Nathan Poulosky, Senator John Compton, Senator Arnoldo Ayala, Senator Alissa Xiao, Senator Sudarshana Rao, Senator Alec Navickis

**ENDORSEMENT(S):** Outreach Coordinator Tyese Braslavsky, Chair Sihah Reza

#### **Illinois Student Government Passage:**

Passed through committee to Senate floor 17-0-0

Recommendation to pass 17-0-0

**12/4/2019** Passed on floor 26-1-1

## Appendix B: List of Contributors

### **Sustainability General Education Working Group**

- Matthew Rodriguez
- Sammy Yoo
- Meredith Moore
- Steven Witt
- Warren Lavey

### **iSEE, Sustainability Subcommittee, iCap Education and Engagement SWATeams**

- Gillen Wood
- Eric Green
- Education Chair: Luis Rodriguez
- Sean Kennedy
- Mallory Mahen
- Engagement Chair: Ann-Perry Witmer

### **iCap Education Team**

### **Gen Ed Board Working Group**

- Bill Stewart
- Jim Miller
- Stephen Downie
- Geoffrey Challen
- Leon Dash
- Sterling Raskie

### **Illinois Student Government, Environmental Sustainability Committee**

- Chair: Alexandra Gergova
- Vice Chair: Maria Maring
- Dana Yun
- Creen Ahmad
- Tyese Braslavsky

### **Office of Provost**

- Kathy Martensen

Appendix C: Endorsements, Sponsors, and Letters of Support

**I. ISG and Academic Senate Sponsors and Endorsements**

We passed the initial resolution through the Illinois Student Government during the third assembly, so below are additional sponsors and endorsements for this proposal from members of the Academic Senate and the 4th and 5th assemblies of ISG.

**4th Assembly:**

**SPONSOR(S):** Senator Creen Ahmad, Senator Tyese Braslavsky, Senator Tyler Swanson, Senator Suda Rao, Senator Enoma Egiebor, Senator Vada Gregory, Senator Nicole Arnold, Senator Bruce Rosenstock, Senator Charles Fogelman

**ENDORSEMENT(S):** Chair of Community and Governmental Affairs Bryce Tune

**5th Assembly:**

**SPONSOR(S):** Senator Alexandra Gergova, Senator Jack Reicherts, Senator Alexandra Nevarez, Senator Bryce Davis, Senator Greg Davidson

**ENDORSEMENT(S):** ISG Vice President Nicole Arnold

**II. Endorsement Letter with Faculty and Organization Signatures**

We, signed below, fully endorse this proposal to create a Sustainability Gen-Ed for incoming undergraduate students. Given the increasing importance of sustainability for the well-being of our society, it is critical that all students at the University become more educated on topics relating to sustainability. All of us signed faculty and registered student organizations recognize the value of sustainability education and the long-term benefit it enables students to create. This Sustainability General Education proposal will allow students to learn sustainable practices that they can apply to their careers, their personal lives, and their circles of influence. Based on this benefit, we strongly encourage the Academic Senate to pass this proposal so that the General Education Board may implement the gen-ed.

Signed,

University Faculty

<b>Name</b>	<b>Position and Department</b>
Gillen Wood	Professor, Environmental Humanities and English
Robert McKim	Professor Emeritus, Religion

Leon Liebenberg	Teaching Associate Professor, MechSE
Clara Bosak-Schroeder	Assistant Professor, History
Bullard, Clark W	Professor Emeritus, Engineering
Brian Deal	Professor, Architecture
Bill Stewart	Professor, Recreation, Sport and Tourism
Ann Witmer	Lecturer, Agricultural and Biological Engineering
Lisa Lucero	Professor, Anthropology
Zsuzsa Gille	Professor, Sociology
Mary-Pat McGuire	Associate Professor, Landscape Architecture
Don Wuebbles	Professor, Atmospheric Sciences
Steve Witt	Director, Global Studies
Ashlynn Stillwell	Associate Professor, CEE
Sean Kennedy	Assistant Professor, Urban Planning
Roderick Wilson	Assistant Professor, History
John Barnard	Assistant Professor, Comparative Literature
Richard Brazee	Associate Professor, NRES
Sotiria Koloutsou-Vakakis	Lecturer and Research Scientist, CEE
Murugesu Sivapalan	Professor, CEE
Jennifer Fraterrigo	Associate Professor, NRES
Jim Miller	Professor, NRES
Carena Van Riper	Assistant Professor, NRES
Elif Ertekin	Associate Professor, MechSE
Brian Dill	Associate Professor, Sociology
Scott Willenbrock	Professor, Physics
May Berenbaum	Professor, Biology
Sarthak Prasad	Sustainable Transportation Assistant, F&S Department
Peter Ondish	Research Scientist, Social Psychology
Hongye Liu	Teaching Assistant Professor, CS
Constance Brown	Lecturer, School of Earth, Society, and Environment

Andrew Stumpf	Principal Research Scientist, Prairie Research Institute
Jamie Jones	Assistant Professor, English Department

### Organizations, Committees, Institutes, and Registered Student Organizations

<b>Organization Name</b>
Illinois Institute for Sustainability, Energy, and Environment (iSEE)
iCap Education SWATeam
iCap Engagement SWATeam with Recommendation: <a href="https://docs.google.com/document/d/1pC-NUbowqowjRf0kQSxhinuhTWwVtY0I/edit?usp=sharing&amp;oid=101372498739058214439&amp;rtpof=true&amp;sd=true">https://docs.google.com/document/d/1pC-NUbowqowjRf0kQSxhinuhTWwVtY0I/edit?usp=sharing&amp;oid=101372498739058214439&amp;rtpof=true&amp;sd=true</a>
Center for Global Studies Advisory Committee
Illinois Student Government Environmental Sustainability Committee
Students for Environmental Concerns UIUC (SECS)
Student Sustainability Committee (SSC)
ActGreen UIUC
Green Greeks
Illinois Enactus
Illini Rotaract
Red Bison

### Appendix D: Universities with Similar Gen-Eds and Programs

Recent STARS reports demonstrate the sustainability-based curriculum changes of several universities. Our university, however, excels in nearly every category besides curriculum. To stay on par with other universities and boost our STARS curriculum score, we must consider universities who excel in this category and supplement our own sustainability education by adding this Gen-Ed to our undergraduate curriculum.

Here is a link to all recent STARS reports:

[https://reports.aashe.org/institutions/participants-and-reports/?sort=-date\\_expiration](https://reports.aashe.org/institutions/participants-and-reports/?sort=-date_expiration)



While the Big Ten schools do not have explicit Sustainability Gen-Ed requirements, many of them have incorporated sustainability into their common curriculum in a number of ways as shown by these details from their STARS reports.

University	Year	STARS Report Details
MSU	2022	<p>Established set of Undergraduate Learning Goals that include concepts related to cultural understanding, citizenship, and the nature of systems. Four global themes:</p> <ol style="list-style-type: none"> <li>1. Responsible global citizenship, ethics &amp; governance</li> <li>2. <b>Sustainability: food, water, and environment</b></li> <li>3. Social justice: conflict, peace, poverty, health, inequality</li> <li>4. Technology and creativity: social networking, cognitive/brain science, nanotechnology, big data</li> </ol> <p>These learning outcomes are specifically taught through the Integrated Studies courses that are required for all undergraduate students. 24 total credits:</p> <ul style="list-style-type: none"> <li>- 8 in Arts and Humanities</li> <li>- 8 in Social, Behavioral, and Economic Sciences</li> <li>- 3 in Biological Sciences</li> <li>- 3 in Physical Sciences</li> <li>- 2 Lab credits in Biological or Physical Sciences</li> </ul>
University of Iowa	2018	Nothing
Ohio State University	2019	23 degree programs with sustainability as a learning outcome and 30% of the student population enrolled in these programs
University of Nebraska-Lincoln	2020	10 different levels of Achievement-Centered Education. Every undergraduate student is required to take at least one course in each of these 10 levels. In two of these categories, every class has at least one learning outcome related to sustainability.
University of Michigan	2018	15% of graduating students come from departments that have sustainability learning outcomes
Penn State	2020	<p>Seven key learning objectives for its Gen-Ed curriculum that apply to all undergraduate students, and three are sustainability-supportive:</p> <ol style="list-style-type: none"> <li>1. Integrative thinking</li> <li>2. Global learning</li> </ol>

		3. Social responsibility and ethical reasoning
Purdue	2020	<p>Institution-wide learning outcomes that map to sustainability from General Education courses include the following:</p> <ul style="list-style-type: none"> <li>- Life and Physical Sciences Learning Objective #2: Demonstrate the ability to model and understand the physical and natural world</li> <li>- Arts and Humanities Learning Objective #4: The ability to develop arguments, ideas, and opinions about forms of human expression, grounded in rational analysis and in an understanding of and respect for the historical context of expressions and artifacts, and to express these ideas in written and/or oral form</li> <li>- Social Sciences Learning Objective #1: Demonstrate knowledge of human cultures based on an understanding of history, social situations, and social institutions</li> <li>- Learning Objective #5: Demonstrate intercultural and/or civic knowledge</li> </ul>
Indiana University Bloomington	2020	Nothing
University of Maryland College Park	2022	<p>Gen-Ed program includes the goal that all undergraduates will be able to define the ethical imperatives necessary to create a just society in their own communities and in the larger world. Learning outcomes supporting sustainability specify that students will:</p> <ul style="list-style-type: none"> <li>- Advance their reasoning, problem solving, speaking and writing skills and begin to use them in all aspects of their lives</li> <li>- Discover new knowledge about the natural world, the past and human thought and action, which will further their understanding of our universe and empower them to meet its challenges</li> </ul>
University of Wisconsin-Madison	2022	~25% of graduates are from departments with sustainability-core learning outcomes
Northwestern University	2020	Learning Objectives: Social responsibility domain recognizes our increasingly diverse and interdependent world and is deeply rooted in fostering a shared commitment to social justice. Social

		<p>responsibility is the purposeful, collaborative pursuit of safe, equitable, and thriving communities through one's self-knowledge, leadership, and advocacy.</p> <p>Sustainability-focused objectives within Civic Engagement:</p> <ul style="list-style-type: none"> <li>- Identifies and addresses needs of community members</li> <li>- Develops an awareness of social problems</li> <li>- Recognizes and upholds shared ethical values and standards</li> <li>- Exercises ethical leadership to meet group, organization, or community goals</li> <li>- Develops global awareness</li> <li>- Demonstrates effective stewardship of human, economic and environmental resources</li> </ul>
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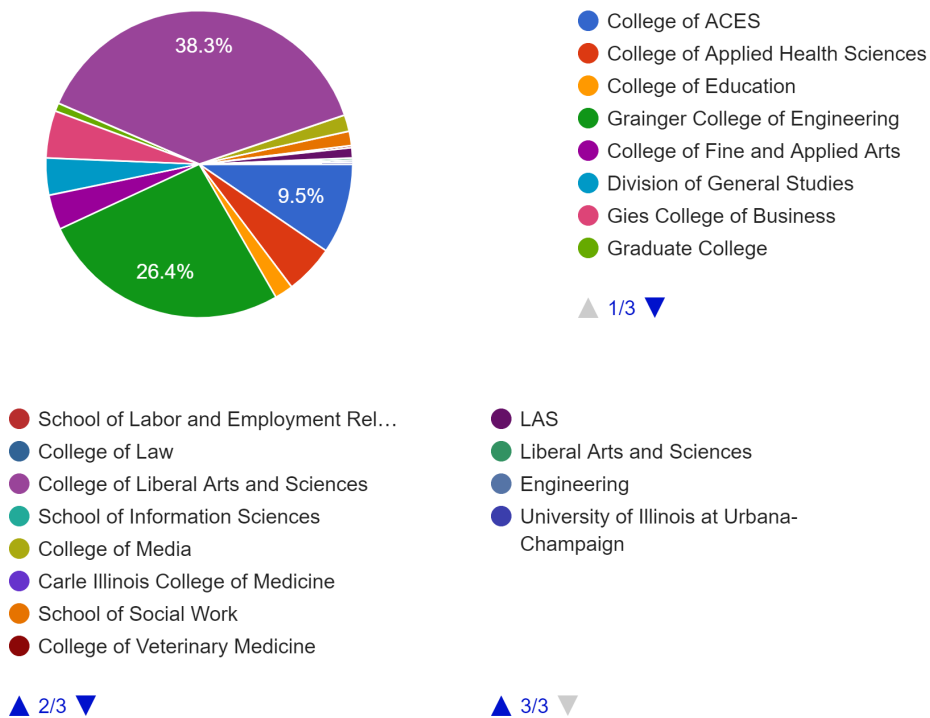
The additional Universities listed below have a course structure more similar to what this proposal will create. Several universities have been adopting sustainability options in their General Education course structure in recent years, and this trend is expected to continue.

<b>University</b>	<b>Gen-Ed or Program</b>	<b>Link</b>
University of Vermont	Sustainability	<a href="https://www.uvm.edu/generaleducation/sustainability">https://www.uvm.edu/generaleducation/sustainability</a>
The State University of New York	Natural Sciences - gen-ed subject area of which students pick 7/10	<a href="https://www.suny.edu/attend/academics/genedreq/">https://www.suny.edu/attend/academics/genedreq/</a>
University of Wisconsin Green-Bay	Sustainability Perspective category, 3-4 credit hours	<a href="http://catalog.uwgb.edu/undergraduate/planning/general-education/#text">http://catalog.uwgb.edu/undergraduate/planning/general-education/#text</a>
Northland College	Environmental curriculum, students must take 5 classes from 3 categories	<a href="http://catalog.northland.edu/preview_program.php?catoid=20&amp;poid=1453">http://catalog.northland.edu/preview_program.php?catoid=20&amp;poid=1453</a>
University of Connecticut	Environmental Literacy	<a href="https://sustainability.uconn.edu/student-resources/">https://sustainability.uconn.edu/student-resources/</a>
San Francisco State University	Environmental Sustainability	<a href="https://ueap.sfsu.edu/bacc-reqs/ge-slos/es">https://ueap.sfsu.edu/bacc-reqs/ge-slos/es</a>

Appalachian State University		<a href="http://bulletin.appstate.edu/preview_program.php?catoid=20&amp;poid=8708">http://bulletin.appstate.edu/preview_program.php?catoid=20&amp;poid=8708</a>
ESF	Natural Sciences	<a href="https://www.esf.edu/provost/gened.asp">https://www.esf.edu/provost/gened.asp</a>
Governor's State University		<a href="https://www.govst.edu/uploadedFiles/Future_Students/Audience_Sub_Landing/GE%20Fact%20Sheet-updated-201516.pdf">https://www.govst.edu/uploadedFiles/Future_Students/Audience_Sub_Landing/GE%20Fact%20Sheet-updated-201516.pdf</a>
Northern Vermont University	An in-depth course in climate change, social justice, or sustainability	<a href="https://www.northernvermont.edu/nvu-online/about-nvu-online/general-education-requirements-online-students">https://www.northernvermont.edu/nvu-online/about-nvu-online/general-education-requirements-online-students</a>
Western Michigan University		<a href="http://catalog.wmich.edu/content.php?catoid=36&amp;navoid=1669">http://catalog.wmich.edu/content.php?catoid=36&amp;navoid=1669</a>

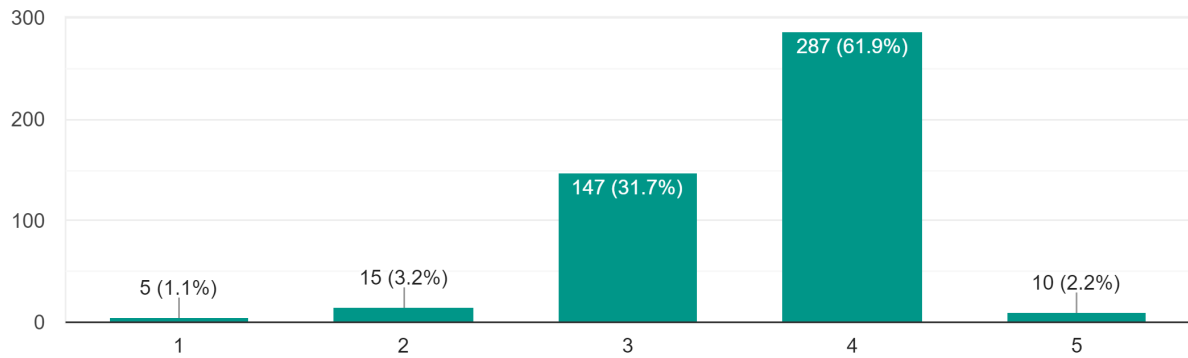
## Appendix E: Student Survey Results

College of Residence  
462 responses



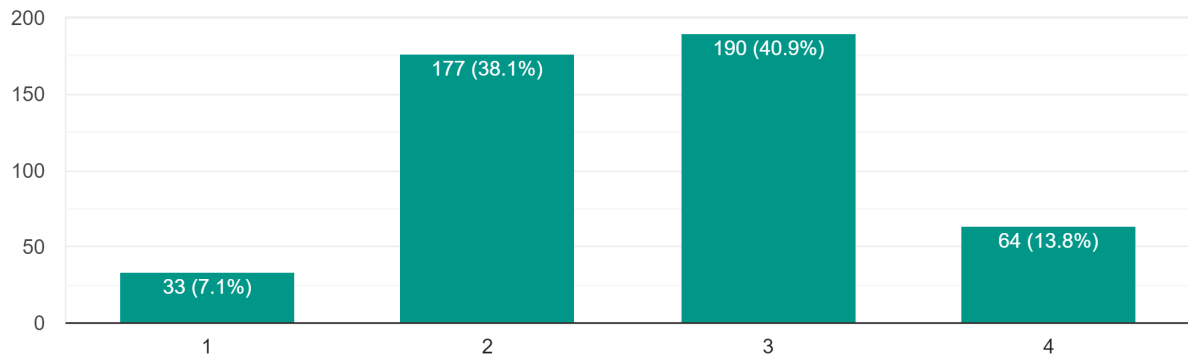
You believe that you are aware of the critical environmental state caused by climate change.

464 responses



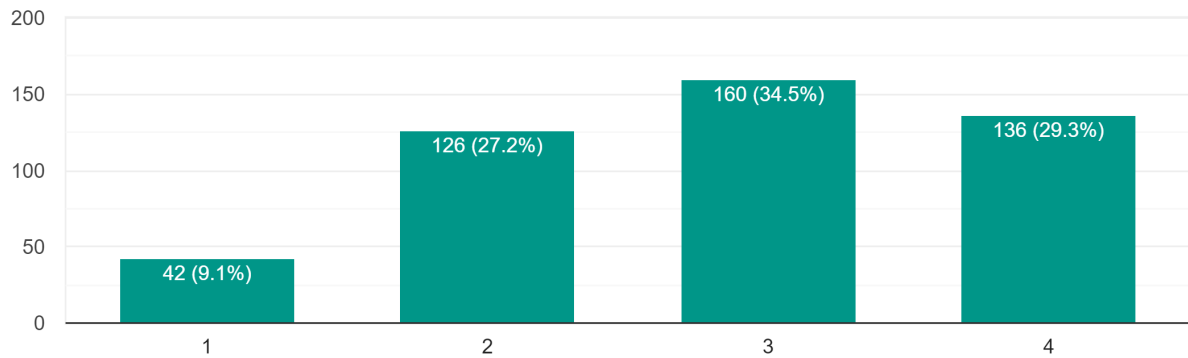
You believe that other students are aware of the critical environmental state caused by climate change.

464 responses



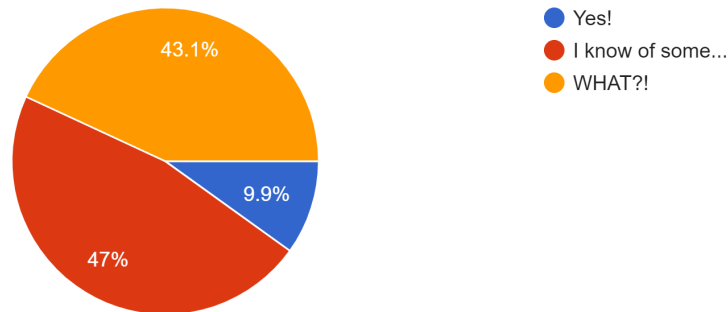
You feel educated on how you can make an environmentally sustainable impact within your field of study.

464 responses



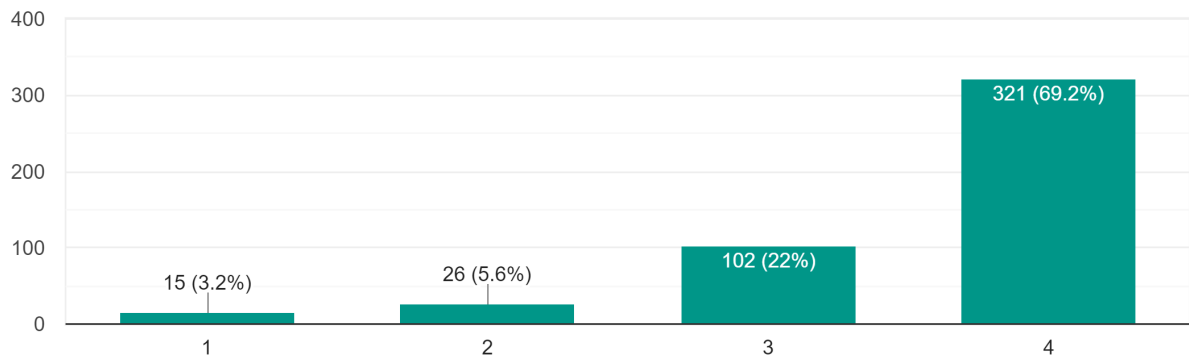
Are you aware of the 500+ courses related to sustainability on our campus?

464 responses



You feel that a Gen-Ed requirement for a Sustainability Course (without increasing the number of Gen Ed credit hours) would have a positive impact.

464 responses



### Appendix F: Sustainability Gen Ed Course Checklist

This table details the proposed checklist that would be used to evaluate courses that may fulfill the Sustainability Gen-Ed.

Yes	No	Criteria
		Section size appropriate?
		Class format (number of lecture meetings, number of lab/discussion meetings, etc.) appropriate?

		Number of instructors responsible for teaching-to-expected student enrollment ratio appropriate?
		An intro course which presents or has a prerequisite a college course that presents the fundamentals of systems and systems thinking, on topics including: human-environment interactions, climate processes, energy production, and ecology?
		Emphasize scientific methodology by involving the student in making observations, evaluating data, and solving problems?
		If designed for non-specialists, include coverage of the relationship of sustainability to human and environmental problems?
		Emphasize the applications of the sciences to the solution of human and societal problems?
		Comprehensive enough to give a broad perspective on the implications of technology to society?
		Emphasize the problem-solving nature of technology by involving the student in such activities rather than being simply descriptive and requiring only memorization of facts?
		Recertify?

## Appendix G: References

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*Participants & Reports | institutions | stars reports - AASHE*. (n.d.). Retrieved August 7, 2022, from [https://reports.aashe.org/institutions/participants-and-reports/?sort=-date\\_expiration](https://reports.aashe.org/institutions/participants-and-reports/?sort=-date_expiration)

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