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# The Role of Sustainability Curricula in Higher Education



Sustainable  
Colgate

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## **Executive Summary**

This report examines the importance of sustainability in higher education curricula. The overarching research question seeks to analyze where Colgate University falls on the sustainability spectrum compared to other institutions of higher education. More specifically, it will be a sustainability course indicator comparing Colgate to similar colleges and universities, our “Peer I and II” schools. This sustainability course inventory is important to share with the campus community because it provides a foundation for advancing a sustainability curriculum. According to the Association for the Advancement of Sustainability in Higher Education (AASHE) (2011), “A list of sustainability courses helps current and prospective students find and understand sustainability course offerings, which can assist them in organizing their academic studies” (p. 36). Moreover, Colgate is falling behind its peer institutions, most of which already have a significant number of sustainability-focused and -related courses.

After conducting the sustainability course inventory and consulting faculty members, I found that sustainability has a fair presence in Colgate’s overall curriculum. Sustainability integrates environmental, economic, and social dimensions towards global stewardship. Out of approximately 1,295 courses offered, 23 are sustainability-focused and 58 are sustainability-related. Furthermore, these courses span 15 out of 39 departments and programs, not including Colgate’s Liberal Arts Core Curriculum. In total, about 6.5 percent of Colgate’s curriculum explores at least two of the three pillars of sustainability. In comparison to Colgate’s peer institutions that have classified their courses related to sustainability, we fall three percent below the average.

Considering this data, I recommend that Colgate advances sustainability education via course designation and supplementation, while publicly demonstrating these efforts. Colgate’s sustainability efforts float somewhere in the middle compared to our peer schools. Improving our efforts to be a more sustainable school will accrue short- and long-term benefits, ranging from economic savings to ecological preservation to social welfare. Therefore, Colgate must prioritize its efforts to include sustainability education and awareness in the curriculum.

## Introduction

I have conducted an Independent Study in Environmental Studies on “The Role of Sustainability in Higher Education.” The purpose of this study is to investigate how Colgate University compares to our peer institutions in regards to the economic, ecological, and social dimensions of sustainability. I specifically analyzed where Colgate falls on the spectrum of sustainability-related and -focused course offerings in comparison to other colleges and universities.

In pursuit of my research goal, I began my research with a review of selected literature on sustainability initiatives in institutions of higher education. Next, I include information regarding sustainability curriculum requirements according to AASHE Sustainability Tracking Assessment & Rating System (STARS) guidelines. Lastly, I reported results from the Interdisciplinary Environmental and Sustainability Education 2012 Census of U.S. Four Year Colleges and Universities by the National Council for Science and the Environment (NCSE). I highlight Colgate’s placement within this assessment to indicate our position compared to our peer institutions.

I conducted an inventory of Colgate’s courses that address issues of sustainability. In order to follow through with this, I reviewed the courses offered within all Departments and Programs, and evaluated them according to Colgate's Sustainability and Climate Action Plan and AASHE STARS guidelines. These guidelines helped me identify the characteristics of courses that can be classified as “sustainability-related” or “sustainability-focused.” I then compared the sustainability courses at Colgate to those at our peer institutions. These comparisons led to more concrete answers on how to judge the “success” of a curriculum with sustainability elements. Lastly, I conclude with recommendations for Colgate’s advancement in sustainability and further questions that must be answered in order to do so.

This study reveals the characteristics of sustainability curricula in higher education, and at Colgate University in particular. The research I conducted is important because Colgate University values its dedication to sustainable and environmentally conscious behavior. Colgate has an educational goal to recognize its responsibilities for the stewardship of the earth’s resources and the natural environment, and is a leader among institutions of higher education (Colgate University Course Catalogue, 2012). Sustainability at Colgate fosters environmentally conscious and just citizens of the world; achieved through a balanced consideration of present and future generations, and of local and global communities in our utilization of natural resources. Therefore, our continual development in sustainability academia will help maintain this position.

## Background Information and Literature Review

### Sustainability in Higher Education

In consideration of contemporary climate change implications, there is a rising value for sustainable development in institutions of higher education. An increase in extreme weather events and population levels combined with a decrease in natural resources threatens the security of local, regional, and global communities. As Wals, Arjen & Jickling (2002) say, “If our universities and colleges do not facilitate this [sustainability] then they basically fail to involve them in one of the biggest political challenges of our time” (p. 223). Therefore, Colgate University should improve and highlight its sustainability efforts within the curriculum and the larger school programming.

Sustainability has long been a part of college and university programming. Literature on this point highlights the necessity of creating short-term targets to achieve long-term sustainability goals that are global in scope, but specific in result. This process includes measuring, comparing, and identifying stakeholders, while acknowledging the dynamism of sustainable development (Graedel, 2002). In order to develop sustainably, an institution of higher education must fulfill specific criteria and assessments. Some indicators of sustainability that Colgate’s Director of Sustainability John Pumilio and Assistant Professor of Geography Jessica Graybill helped me come up with are listed below. We suggest that if at least some of the following list is present at a school, it should be considered a “sustainable” institution.

- Sustainability Department
  - Sustainability Coordinators and/or Officers
  - Hired interns
- Sustainability Council made up of faculty and staff
- American College and University Presidents’ Climate Commitment (ACUPCC) signatories
  - Completed and submitted Greenhouse Gas Inventory
  - Completed and submitted Sustainability and Climate Action Plan
- Participating in Association for the Advancement of Sustainability in Higher Education (AASHE) Sustainability Tracking, Assessment, & Rating System (STARS)
  - Includes a gauge for Education & Research, Operations, and Planning, Administration, & Engagement on campus
- Sustainability incorporated into their Campus Master Plan
- Sustainability Strategic Plan for the short- and long-term
- Sustainability-related majors and/or minors
  - Relationship between sustainability initiatives and sustainability-related majors and/or minors
- Study program(s) that focus on sustainability outside of campus (i.e., study abroad programs)
- Sustainability faculty members
- Assessment for sustainability in the curriculum
- Student clubs, events, and activities that focus on sustainability
- Faculty support public scholarship concerning sustainability

According to Graedel (2002), “Quantitative target[s] can be defined and defended. Colleges and universities that meet these targets can legitimately call themselves ‘sustainable’” (p. 346). The above list of targets is extensive, yet Colgate has already achieved many of the indicators.

Unfortunately, the depth of our commitment to and involvement in these areas of sustainability as compared to our peer institutions could not be included in this report. My research focuses solely on assessing sustainability in the curriculum due to the time constraint of this study. Nevertheless, sustainability lessons in the classroom are critical for understanding and solving the emerging environmental problems our world is facing. As Graedel (2002) explains, nature, life support, and community systems must be sustained, while people, the economy, and society must be developed. In applying these guidelines academically, an interdisciplinary approach must be taken to include natural scientists, economists, social scientists, and humanists.

Globally, many institutions of higher education have already indoctrinated sustainability-related and -focused courses. For instance, Colgate’s peer institution, Saint Lawrence University, is implementing a mandatory sustainability class entitled “Environmental Literacy” (L. Gava, Coordinator of Sustainability Projects, personal communication, November 15, 2012). Required courses like this support the perpetuation and dissemination of sustainability knowledge. Similarly, Furman University in South Carolina requires all students to take “Humans and the Natural Environment,” fulfilling their schools mission to instill students with the skills and knowledge to create a healthy, just, and sustainable world. Moreover, they have a “Center for Sustainability” that provides guidance and collaboration across the curriculum for sustainability efforts and community-based research (Cortese, 2010). Sustainability has long been a part of college and university programming, and is becoming increasingly prioritized. Wright & Tarah (2009) found that among the university Presidents and Vice Presidents that they interviewed, the majority of them responded that academic programming was their top priority regarding achieving sustainability as an institution. Accordingly, at the local and global scales, we cannot reach sustainability without education on this interdisciplinary topic.

Even though we have generated an extensive list of sustainability indicators, sustainability, as an assertion, is still quite ambiguous in and of itself. Therefore, it is inherently difficult to conduct a research project through a sustainable lens, as there is large scholarly contention over the effectiveness of the definition sustainability. For instance, environmental historian Donald Worster (1993) claims, “Besides suggesting no clear time frame, the ideal of sustainability presents us with a bewildering multiplicity of criteria, and we have to sort out which ones we want to emphasize before we can develop any specific programme of action” (p. 134). However, we can embrace the evolving, inclusive qualities of sustainability, utilizing it in specific niches for improvement, such as sustainability enrichment within the curriculum. Distinct courses will deepen sustainability goals of higher education, connecting academia to the reduction of global, negative economic and social footprints on the environment (Cortese, 2010). Therefore, I was able to overcome the challenge of “sustainability’s” interdisciplinary nature by focusing on the sustainability of courses within Colgate’s curriculum, and following AASHE’s specific guidelines for sustainability course assessment.

### Sustainability Curriculum Requirements

AASHE works to make sustainability in higher education a norm by providing resources and tools to learn, assess, and improve collegiate practices. They disseminate “essential knowledge resources; outstanding opportunities for professional development; and a unique framework for demonstrating the value and competitive edge created by sustainability initiatives” (<http://www.aashe.org/about>). Their progressive efforts provide extensive sustainability initiatives, including sustainability curriculum development. The AASHE STARS evaluation report provides sustainability curriculum requirements in the Education and Research (ER) section, specifically with ER Credits 5-14. This report answers ER Credits 6-8, as Colgate’s Department of Sustainability 2012 summer interns have answered the others previously. Credit 6 pertains to sustainability-focused courses, 7 to sustainability-related courses, and 8 to sustainability-focused and -related courses by department. These guidelines identify specific characteristics of courses that fulfill sustainability classification. The rules that AASHE provides are helpful in conducting inventories of and giving recognition to school courses that address issues of sustainability.

### Comparing Sustainability Programs in Higher Education

The National Council for Science and the Environment (NCSE) non-profit organization fosters collaboration among institutions to create, use, and shape environmental knowledge important for decision-making processes (Vincent, Bunn, & Stevens, 2012). It has recently published a report evaluating curricular characteristics of interdisciplinary environmental (IE) and sustainability academic programs in all four-year institutions of higher education across the nation. The “Interdisciplinary Environmental and Sustainability Education: Results from the 2012 Census of U.S. Four Year Colleges and Universities” reveals that since 2008, there has been a sharp increase in schools hosting IE and sustainability programs: a 29 percent increase in general course programming, 37 percent increase in degree-granting programs, and a 57 percent increase in degree programs (Vincent, Bunn, & Stevens, 2012). The majority of IE and sustainability degree programs involves interdisciplinary academic credits and is part of an autonomous department, institute, or college. Colgate’s Environmental Studies Program counts as an IE or sustainability degree-granting programs.

The NCSE makes clear the growing importance of sustainability in the world of academia. This made me realize the gravity of the way in which I communicate my methodology and results. I was able to successfully undertake this by reviewing Colgate’s exemplary peer institutions. Accordingly, my methods, results, and recommendations are explained in the following sections of this report.

## **Methods**

### Defining Colgate’s Sustainability Curriculum

To understand how sustainability works in the curriculum, I had to choose a specific guideline to follow and define where Colgate stands in this regard. John Pumilio, Colgate’s Director of



Sustainability, has developed definitions for “sustainability-related” and “sustainability-focused” courses. These definitions were approved by Colgate’s Sustainability Council and are as follows:

- *Sustainability-related courses*: The course concentrates on two of the three dimensions of sustainability (economic prosperity, social well-being, or environmental health) and/or a major component of the course concentrates on a key sustainability principle or concept
- *Sustainability-focused courses*: The course concentrates on each of the main dimensions of sustainability (i.e., economic, social, and environmental)

I adopted these for the course inventory I conducted, in addition to AASHE STARS guidelines for the classification of sustainability courses. The technical manual suggests considering the whether or not a course has these attributes:

- Understand and be able to effectively communicate the concept of sustainability
- Develop and use an ethical perspective in which they view themselves as embedded in the fabric of an interconnected world
- Become aware of and explore the connections between their chosen course of study and sustainability
- Develop technical skills or expertise necessary to implement sustainable solutions
- Understand the way in which sustainable thinking and decision-making contributes to the process of creating solutions for current and emerging social, environmental, and economic crises
- Contribute practical solutions to real-world sustainability challenges
- Synthesize understanding of social, economic, and environmental systems and reason holistically (AASHE STARS, 2012, p. 42)

I used Pumilio’s definitions and the AASHE guidelines to examine courses offered within each Department and Program of study on campus. I reviewed course descriptions in the 2012-2013 Colgate University Course Catalog to collect an inventory of sustainability-related and -focused courses. Next, I emailed or met with the every dept chair or program director to hear their review of the list I created and learn their perspectives concerning the role of sustainability within their division. (See Appendix A for example emails.) More often than not, Professors would respond with suggestions or comments, solidifying my list. Multiple professors inquired further about the requirements for a sustainability-related versus -focused courses. Therefore, I expanded the aforementioned definitions for the classification of sustainability courses. (See Appendix B for complete revised classification.) As an addendum:

- *Sustainability-related courses*: The course helps “build knowledge about a component of sustainability or introduce students to sustainability concepts during part of the course. ...[They may provide] students with in-depth knowledge of a particular aspect or dimension of sustainability (such as the natural environment), ...a focus area (such as renewable energy) for a student’s sustainability studies, or they may broaden students’ understanding of sustainability from within different disciplines” (AASHE STARS, 2012, p. 43)
- *Sustainability-focused courses*: The course “provides valuable grounding in the concepts and principles of sustainability. These courses educate students about how different

dimensions of sustainability relate to and support each other in theory and practice. In addition, these courses help equip students with the skills to weave together disparate components of sustainability in addressing complex issues” (AASHE STARS, 2012, p. 40)

After contacting all departments and programs at Colgate, I recorded the responses. I collected a variety of responses, and continued evaluation if there were comments or concerns with my course designation. If I did not hear back from the chair or director, I sought out the professors who taught the sustainability-related or -focused courses I listed.

### Comparing Sustainability Curriculum with Peer Institutions

This sustainability course inventory is important to share with the community of higher institutions because it provides a foundation for advancing sustainability curriculum. According to AASHE STARS Technical Manual (2011), “It provides a baseline for understanding current offerings and can help institutions identify strengths and opportunities for growth. In addition, a list of sustainability courses helps current and prospective students find and understand sustainability course offerings, which can assist them in organizing their academic studies” (p. 36). By completing this inventory and reporting the results to AASHE STARS and the NSCE, we can evaluate how Colgate University is doing compared to its similar colleges and universities, so it can remain competitive.

I compared Colgate’s sustainability curriculum to its 19 Peer I and II institutions. I evaluated these colleges on their information in the NSCE report on sustainability programs, and on their AASHE STARS ratings. I was then able to gain further understanding on sustainability curricula in higher education, and assess Colgate more deeply.

## **Results**

### Sustainability Course Inventory for Colgate University

After reviewing all course descriptions in the 2012-2013 Colgate University Course Catalog and contacting the chairs of each depart and program of study, I was able to collect an inventory of sustainability-related and -focused courses.

Sustainability-focused courses by department/program:

- Biology
  - Tropical Ecology/Tropical Ecology Extended Study (BIOL 332/332E)
- Economics
  - Environmental Economics (ECON 228)
  - Natural Resource Economics (ECON 328)
  - Seminar in Resource and Environmental Economics (ECON 428)

- Environmental Studies<sup>1</sup>
  - Nature, Technology, and the Human Prospect (ENST 316)
  - Food (SOAN/ENST/CORE 319)
  - Renewable Energy: Research and Implementation/Alternative Energy: Research and Implementation in Norway Extended Study (ENST 336/ENST 336E)
  - Managing Complexity: America's Public Lands (ENST 344)
  - Community-based Study of Environmental Issues (ENST 390)
- Geography
  - Human Impact on the Environment (undergoing name-change to Earth, Society, and Sustainability) (GEOG 121)
  - Climate and Society (GEOG 205)
  - Globalizing East Asia: Comparative Economic Geography (GEOG 313)
  - Population Issues and Analysis (GEOG 314)
  - Globalization, Development, and Environment (GEOG 320)
  - Gender, Justice, and Environmental Change (GEOG 321)
  - Water and Society (GEOG 325)
- Geology
  - Earth Resources (GEOL/CORE 120S)
- Liberal Arts Core Curriculum (spanning multiple departments/programs)
  - Energy and Sustainability (CORE 101S)
  - Ecology, Ethics, and Wilderness (CORE 114S)
  - Earth Resources (GEOL/CORE 120S)
  - Climate Change and Human History (CORE 123S)
  - Ecology and the Quality of the Environment (CORE 159S)
  - Food (SOAN/ENST/CORE 319)
- Religion
  - Religion, Science, and the Environment (RELG 236)
- Sociology & Anthropology
  - Nature, Culture, and Politics (SOAN 245S)
  - Food (SOAN/ENST/CORE 319)

Sustainability-related courses by department/program:

- Asian Studies
  - Religion, Nature, and Environmentalism in South Asia (RELG 420)
- Biology
  - Evolution, Ecology, and Diversity (BIOL 211/211L)
  - Ecosystem Ecology (BIOL 329/329L)
  - Conservation Biology (BIOL 330)
  - Field Ecology (BIOL 328/328L)
  - Limnology (BIOL 335/335L)
  - Investigations in Biodiversity, Community, and Ecosystem Ecology (BIOL 476)
- Chemistry

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<sup>1</sup> Environmental Studies Program: foci will vary depending upon the project: 291, 391, 491 Independent Study Research and Implementation; 490 Seminar in Environmental Studies

- Chem-Altered & Natural Environment (CHEM 100)
- Environmental Chemistry (CHEM 477)
- Economics
  - Economic Development (ECON 238)
  - Urban Economics (ECON 333)
  - Growth and Distribution (ECON 386)
  - Seminar in Economic Development (ECON 438)
- Environmental Studies<sup>2</sup>
  - Social Science Perspectives on Environmental Issues (ENST 101)
  - Earth and Environmental Processes (ENST/CORE 127/127L)
  - Environmental Ethics (ENST/PHIL 202)
  - Environmental Justice (ENST 232)
  - Global Environmental Health Issues (ENST 233)
  - Global Environmental Justice (ENST 321)
  - Environment and Community Health in Africa: A Case Study in Rural Uganda Extended Study (ENST 333)
- Geography
  - Global Shift: Economy, Society, and Geography (GEOG 111)
  - Geopolitics (GEOG/PCON 310)
  - Urban Geography (GEOG 311)
  - Dispossession, Dislocation, and Disease: Geographies of Population Vulnerability (GEOG/PCON 317)
  - Ecologies of the City (GEOG 322)
  - Arctic Transformations (GEOG 323)
  - International Environmental Policy (GEOG 324)
  - Environmental Hazards (GEOG 326)
  - Australia's Stolen Generations: The Legacies of Carrolup Extended Study (GEOG/PCON 327E)
- Geology
  - Environmental Geology (GEOL 101/101L)
  - Hydrology and Surficial Geology (GEOL 210)
  - Coastal Geology (217/217L)<sup>3</sup>
  - Stratigraphy and Sedimentation (GEOL 302/302L)
  - Environmental Economic Geology (GEOL 310)
  - Hydrogeology and Groundwater Pollution (GEOL 330)
  - Paleoclimatology (GEOL 350)
  - Seminar on Reefs/Tropical Field Course on Modern and Pleistocene Reefs (GEOL 415/415L)
  - Marine Environments (GEOL 426)
  - Seminar on Acid Rain (GEOL 430)

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<sup>2</sup> Environmental Studies Program: foci will vary depending upon the project: 291, 391, 491 Independent Study Research and Implementation; 490 Seminar in Environmental Studies

<sup>3</sup> Geology Department: 217/217L Coastal Geology taught by Professor Paul Pinet does not use the word “sustainability” in this course, despite its relevance to the concept (P. Pinet, personal communication, December 5, 2012)

- History
  - American Environmental History (HIST 220)
- Liberal Arts Core Curriculum (spanning multiple departments/programs)
  - Introduction to Environmental Chemistry (CORE 102S)
  - The Science and Potential Implications of Nanotechnology (CORE 105S)
  - Conserving Nature (CORE 107S)
  - Earth and Environmental Processes (ENST 100/100L; CORE 127/127L)
  - Global Change and You (CORE 128S)
  - Dangerous Earth: Science of Geologic Disasters (CORE 129S)
  - The Sixth Extinction (CORE 134S)
  - From the Atkins Diet to the Kyoto Treaty: Science, the News Media, and You (CORE 141S)
  - Caribbean Ecology and Environmental Concerns (CORE 154S)
  - The Air Up There (CORE 166S)
  - The Arctic (CORE 168C)
  - North American Indians (CORE 176C)
- Marine Science – Freshwater Science
  - Limnology (BIOL 335/335L)
  - Coastal Geology (217/217L)
  - Stratigraphy and Sedimentation (GEOL 302/302L)
  - Seminar on Reefs (GEOL 415)
  - Seminar on Reefs/Tropical Field Course on Modern and Pleistocene Reefs (GEOL 415/415L)
  - Marine Environments (GEOL 426)
- Native American Studies Program
  - North American Indians (CORE 176C)
  - Contemporary Issues in Native American Studies (NAST 302)
- Peace and Conflict Studies Program
  - Geopolitics (GEOG/PCON 310)
  - Dispossession, Dislocation, and Disease: Geographies of Population Vulnerability (GEOG/PCON 317)
  - Religious Faith and Social Ethics (RELG/PCON 333)
  - Australia’s Stolen Generations: The Legacies of Carrolup (GEOG/PCON 327)
- Philosophy
  - Environmental Ethics (ENST/PHIL 202)<sup>4</sup>
  - Topics in Environmental Philosophy (PHIL 333)
  - International Ethics (PHIL 313)
- Political Science
  - U.S. Environmental Politics PG (POSC 225)
- Religion
  - Contemporary Issues and Values: Moral Conflicts in the 21st Century (RELG 201)

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<sup>4</sup> Philosophy Program: Professor Jason Kawall of ENST/PHIL 202 expressed that this course addresses all three aspects of sustainability and, therefore, may be considered sustainability-focused instead of -related (J. Kawall, personal communication, December 11, 2012)

- Religious Faith and Social Ethics (RELG/PCON 333)
- Religion, Nature, and Environmentalism in South Asia (RELG 420)
- Sociology & Anthropology
  - Globalization, Culture, and Everyday Life (SOAN 337)

Overall, the total<sup>5</sup> sustainability curriculum results are as follows:

- 23 out of approximately 1,295 courses (~2%) offered at Colgate are sustainability-focused
- 58 out of 1,295 courses (~4.5%) offered at Colgate are sustainability-related
- Approximately 6.5% of Colgate's total courses are either sustainability-related or -focused
- 15 out of 39 departments/programs offer at least one sustainability-focused or -related course, not including Colgate's Liberal Arts Core Curriculum

In order to include the total number of courses that Colgate offers, I hand counted each course listed in the 2012-2013 Colgate Course Catalogue. Since I completed the counting on my own without a second opinion, the number is not officially accurate. Nonetheless, this count seems about right because Maura Moore, Assistant Registrar, said a total of 1,698 courses were offered for the fall 2012 and spring 2013 semester combined – including multiple sections for many courses and course labs (M. Moore, personal communication, December 13, 2012). Therefore, the number should be marginally below 1,698 (around 1,295).

The above list of sustainability-focused and -related courses was created after my own investigation and confirmation from Colgate faculty. More often than not, Professors would respond with suggestions or comments. For instance, both Professor Adam Burnett and Peter Scull suggested that I remove Environmental Geography (GEOG 131) from the “sustainability-related” course list, because it doesn't deal with economic prosperity or social well being in addition to environmental health (A. Burnett and P. Scull, personal communication, November 12, 2012). Other professors suggested that I shift courses from one classification to another, or add/drop certain classes. Moreover, departments that did not have any courses related to sustainability expressed interest in the topic. For example, Professor Rebecca Shiner agreed with my assessment that the Department of Psychology does not have any courses on sustainability; nonetheless, she explained that the psychology field has only just begun to investigate issues like global warming, and perhaps there will be courses in the department in the future once there is more research (R. Shiner, personal communication, November 5, 2012). Professor Daniel Schult of Mathematics and Professor Philip Mulry of Computer Science both had similar hopes as to Professor Shiner (D. Schult, personal communication, November 9, 2012; P. Mulry, personal communication, November 7, 2012). Therefore, there is hope for a growing sustainability curriculum across various disciplines in the near future.

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<sup>5</sup> Courses that are cross-listed in the Colgate catalog under multiple departments and programs are listed under each department here but were not counted multiple times when calculating the total number of sustainability-related and -focused courses

The sustainability course inventory was not without challenges, though. There was much contention among faculty concerning the lack of specificity of sustainability-focused and -related courses. For instance, Professor Turner and O'Hara of the Department of Economics both questioned the broad definition of a sustainability-related course (only incorporating two of the three pillars of sustainability). In this regard, all economic courses would relate to sustainability because "the idea of 'social well-being' ... could be arguably applied to all econ courses, since this is in theory the goal of economics" (M. O'Hara, personal communication, December 6, 2012). Similarly, Professor Turner said, "I think all economists would think that economic prosperity is so linked to social well-being that any economics course would concentrate on those two aspects of sustainability and therefore meet your (John's) criterion for sustainability-related courses" (B. Turner, personal communication, December 5, 2012). Therefore, I decided to expand upon John Pumilio's (and the Sustainability Council's) definitions. (See Appendix B for revised definitions.)

Overall, I received responses from the majority of departments and programs at Colgate. The three disciplines that would have been helpful to have input from were: Religion, English, and Peace and Conflict Studies. Nonetheless, I received great advice from most departments and programs, and had ongoing discourse on the challenges of identifying and incorporating sustainability into the curriculum. These responses from Colgate faculty were essential to completing my ENST 491 Independent Study research project. Unfortunately, additional research for this study could not be addressed due to time barriers.

### Comparing Sustainability Curriculum in Higher Education

According to NCSE's report, Interdisciplinary Environmental and Sustainability Education, Colgate is on par with our peer institutions. 12 out of 19 of our peer schools (see list below) are NCSE and AASHE affiliates, and have notable sustainability programming. However, Colgate was not included in multiple areas that our peer schools were. For instance, Wesleyan University has an entire "division or school" dedicated to sustainability; and Williams and Middlebury College have sustainability degree-granting "institutes or centers." Also, 249 institutions of higher education have sustainability departments, including our peer schools Mount Holyoke College and Saint Lawrence University (Vincent, Bunn, & Stevens, 2012). In comparison, Colgate has a program relating to sustainability, the "Environmental Studies Program," as some of our peers also have.

Below is a list of Colgate's peer schools. According to the AASHE website, I found that six of Colgate's peer institutions have their sustainability-focused and -related courses publicly available online. A star indicates these schools, and their sustainability course classification is provided underneath the school name. Most of this information was provided by the NCSE report (Vincent, Bunn, & Stevens, 2012) and the AASHE website (<http://www.aashe.org/>).

Colgate's Peer I and II institutions of higher education:

#### **Amherst College**

- Environmental Studies Program – Degree: BA Environmental Studies
- Neither NCSE nor AASHE member

**Bowdoin College**

- Environmental Studies Program; Division of Natural Science – Degree: BA Environmental Studies
- NCSE member
- AASHE member, but no rating on courses within its STARS participant survey

**Bucknell University**

- Environmental Studies Program; College of Arts and Sciences – Degree: BA Environmental Studies and BA Environmental Science
- NCSE member
- Not AASHE member
- Information on sustainability courses was found at the website below. This identified that over 100 courses at Bucknell relate to sustainability. There was no information on the total number of courses this was out of.
  - <http://www.aashe.org/resources/profiles/2009/bucknell-university>

**Colby College**

- Environmental Studies Program; Division of Interdisciplinary Studies – Degree: BA Environmental Studies
- NCSE member
- AASHE member, but no rating on courses within its STARS participant survey

**Connecticut College**, not NCSE university affiliate member 2012-2013

- Environmental Studies Program – Degree: BA Environmental Studies
- NCSE member
- Not AASHE member

**Dartmouth College**

- Neither NCSE nor AASHE member

**Hamilton College**, not NCSE university affiliate member 2012-2013

- Environmental Studies Program – Degree: BA Environmental Studies
- Environmental Policy Program, Fordham College at Rose Hill and Lincoln Center – Degree: BA Environmental Policy
- Global Sustainability Program; Graduate School of Business Administration – Degree: Other Masters: Global Sustainability
- NCSE member
- Not AASHE member

**Haverford College**

- Not NCSE member
- AASHE member, but no rating on courses within its STARS participant survey

**\*Middlebury College**

- Environmental Center – Degree: BA Environmental Studies
- Environmental Center (IE and sustainability degree-granting institutions and centers)
- NCSE and AASHE affiliate member
- 32/757 total courses are sustainability-focused = ~4%
- 152/757 courses are sustainability-related = ~20%
- Total presence of sustainability in the curriculum = ~24%

**\*Mt. Holyoke College**

- Department of Environmental Studies – Degree: BA Environmental Studies
- NCSE and AASHE member



- 62/1641 total courses are sustainability-focused = ~4%
- 40/1641 courses are sustainability-related = ~2%
- Total presence of sustainability in the curriculum = ~6%

**\*Oberlin College**, not NCSE university affiliate member 2012-2013

- Environmental Studies Program – Degree: BA Environmental Studies
- NCSE and AASHE member
- 37/525 total courses are sustainability-focused = ~7%
- 18/525 courses are sustainability-related = ~3.5%
- Total presence of sustainability in the curriculum = ~10.5%

**Smith College**

- Environmental Science and Policy Program – Degree: BA Environmental Science and Policy
- NCSE member
- AASHE member, but no rating on courses within its STARS participant survey

**St. Lawrence University**

- Department of Environmental Studies – Degree: BA Environmental Science
- NCSE member
- AASHE member, but no rating on courses within its STARS participant survey

**\*Swarthmore College**

- Department of Biology – Degree: BA Environmental Studies
- NCSE and AASHE member
- 23/743 total courses are sustainability-focused = ~3%
- 11/743 courses are sustainability-related = ~1.5%
- Total presence of sustainability in the curriculum = ~4.5%

**Trinity College**, not NCSE university affiliate member 2012-2013

- Environmental Science Program – Degree: BS Environmental Science
- NCSE member
- Not AASHE member

**Union College**, not NCSE university affiliate member 2012-2013

- Environmental Science, Policy and Engineering Program; Department of Geology – Degree: BS Environmental Science; BA Environmental Policy
- NCSE member
- Not AASHE member

**\*Vassar College**

- Environmental Studies Program – Degree: BA Environmental Studies; BA Earth Science and Society: Land and Resources
- NCSE and AASHE member
- 16/1100 total courses are sustainability-focused = ~1.5%
- 23/1100 courses are sustainability-related = ~2%
- Total presence of sustainability in the curriculum = ~3.5%

**Wesleyan University**

- College of the Environment (IE and sustainability primary level divisions, schools, and colleges) – Degree: BS Environmental Studies
- Department of Earth and Environmental Sciences – Degree: BS Earth & Environmental Science; MA Earth and Environmental Sciences
- AASHE member, but no rating on courses within its STARS participant survey

**\*Williams College**

- Center for Environmental Studies (IE and sustainability degree-granting institutions and centers) – Degree: BA Environmental Policy; BS Environmental Science
- NCSE and AASHE member
- 24/671 total courses are sustainability-focused = ~3.5%
- 11/671 courses are sustainability-related = ~1.5%
- Total presence of sustainability in the curriculum = ~5%

On average, Colgate's six peer schools that are ranked by AASHE STARS have approximately 9 percent of their total curriculum relating to or focusing on sustainability. Since this list is currently being refined for Colgate, we do not have our ratings publicly available yet. But according to my calculations Colgate's rankings are as follows:

**Colgate:**

- Environmental Studies Program; the Marine Science Program – Degree: BA Environmental Studies; BA: Marine Science
- NCSE member
- AASHE member, but no rating on courses within its STARS participant survey
- 23/1,295 total courses are sustainability-focused = ~2%
- 58/1,295 courses are sustainability-related = ~4.5%
- Total presence of sustainability in the curriculum = ~6.5%

Colgate University appears to be on par, offering BA degrees in Environmental Studies Program; Division of Natural Sciences and Mathematics and the Marine Science Program; Division of Natural Sciences and Mathematics. Another notable feature of Colgate is our formal partnership with other universities that offer sustainability relevant courses. We offer a study program in Massachusetts: Marine Biological Laboratory – Biological Discovery in Woods Hole; and also outside the country at the University of Wollongong and Curtin University in Australia.

**Recommendations and Next Steps**

In order to follow through with this project on the sustainability curriculum at Colgate, some important steps must take place. First, Colgate must develop and publicize a more concrete definition of sustainability within the curriculum, sustainability-related courses, and sustainability-focused courses. When contacting faculty, I found that many were unclear with what it takes to be rated sustainability-related or -focused. I recommend that the Sustainability Council, made up of Colgate faculty, staff, and students, takes another look at these definitions and works off my compiled qualifications in Appendix B. After this is clarified, the courses that are footnoted as questionable can be reevaluated and shared with faculty and staff at Colgate. It should also be reported on our AASHE STARS ratings of ER Credits 6-8, which publicly reveal sustainability-related and -focused courses.

After this reevaluation we will have more accurate percentages of our sustainability courses, which will be helpful in comparing sustainability curriculum in higher education. With this we can more thoroughly compare Colgate's curriculum to that of its peer institutions. I suggest that in addition to using the AASHE STARS reports, we use school websites to find more details,

especially with schools that are not AASHE members.

Next, Colgate must actualize its vision of sustainability education on campus. According to Colgate's Sustainability and Climate Action Plan (2011), "One mechanism to further promote sustainability in the curriculum is through the annual faculty retreat held at the White Eagle Conference Center" (p. 81). At this retreat, faculty share best practices on how to incorporate sustainability into their courses. This will help solidify how sustainability relates to different departments and programs at Colgate.

Discourse on sustainability within the curriculum is beneficial in and of itself, as it can lead to further questions on the matter. Some questions may relate to the place of programs of sustainability in short- and long-term planning with higher education. In example, how are principles and goals of sustainability communicated by institutions? Or, does Colgate's peer institutions support public scholarship by faculty concerning sustainability? Moreover, discourse may result in faculty conducting their own research to see how sustainability can be incorporated into their own expertise.

These lingering questions can be answered with further independent research, or involvement with programs outside our institution. For instance, it would be beneficial to contact the NCSE Director of Education Research, Dr. Shirley Vincent, at [svincent@ncseonline.org](mailto:svincent@ncseonline.org) or 918-629-5143. In doing this, they can provide a "customized quote or more information on how NCSE's research and data can help you competitively position your program in the national IE and sustainability education landscape" (Vincent, Bunn, & Stevens, 2012, p. 32). Furthermore, AASHE provides curriculum design workshops that would be beneficial for Colgate to look into; see <http://conf2012.aashe.org/workshop/curriculum-design> for more information.

## Reflection

This Independent Study on the role of sustainability curricula in higher education has revealed the multifaceted complexity of sustainability and institutional programming. Although reading scholarly reviews explaining these terms was helpful, only an intensive project like this could provide me with a firsthand understanding of the functioning of sustainability at institutions of higher education. As the semester progressed, I discovered the depth, breadth, and significance of defining sustainability in the curriculum.

Overall, this report discloses information on where Colgate stands with the presence of sustainability in the curriculum. It will help be a sustainability course indicator comparing Colgate to similar colleges and universities, our "Peer I and II" schools. This research is important because Colgate University is dedicated to becoming a leader in sustainability efforts. It reveals that we are progressing further than our current status on the Sustainability and Climate Action Plan. In section 5.1 (Colgate University, 2011), it explains that Colgate offers "40 courses per semester that are either focused on or related to sustainability" (p. 80). The report I have conducted will help clarify the exact number of courses classified as sustainable.

The necessity of improving our campus in a sustainable manner is highlighted in academic literature. Cortese (2010) claims that colleges and universities have the power to resolve these

great moral and social challenges of the day through education. Specifically, sustainability education and awareness helps students understand, believe in, and take action to support beneficial economic, environmental, and social steps towards a healthier world. Scholars of sustainability insist that the “major restructuring of disciplines or of pedagogy... is essential to move forward” (Wright, 2009, p. 71). Colgate University needs to refocus its curriculum, acting as an agent of change for a better, more sustainable world. Our institution should recognize this effort, as one of Colgate’s educational goals is to recognize its responsibilities for the stewardship of the earth’s resources and the natural environment (Colgate University Course Catalogue, 2012).

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## Appendix A: Sample Email to Faculty

To faculty in department/program with zero courses related to sustainability

Dear Professor \_\_\_\_\_,

This semester, I am conducting an Independent Study in Environmental Studies on “The Role of Sustainability in Higher Education.” The purpose of this study is to investigate how Colgate compares with our peer institutions on specific dimensions of sustainability. In pursuit of this research goal, I am currently conducting an inventory of Colgate’s courses that address issues of sustainability.

John Pumilio, Colgate’s Director of Sustainability, has developed definitions for “sustainability-related courses” and “sustainability-focused courses” listed in our Climate Action Plan that I have adopted for this assessment.

- *Sustainability-related courses*: “If the course concentrated on two of the three dimensions of sustainability (economic prosperity, social well-being, or environmental health) and/or a major component of the course concentrated on a key sustainability principle or concept, then we considered the course sustainability-related”
- *Sustainability-focused courses*: “If the course *concentrated* on each of the main dimensions of sustainability (i.e., economic, social, and environmental), then we considered it sustainability-focused”

I assess courses according to AASHE STARS guidelines. These guidelines identify the following characteristics of courses which can be classified as sustainability-related or -focused: *it explores the connections between a chosen course of study and sustainability; develops skills to implement practical sustainable solutions; explains the way in which sustainable thinking and decision-making contributes to the process of creating solutions for current and emerging social, environmental, and economic crises; and/or synthesizes understanding of social, economic, and environmental systems.*

In reviewing the courses offered within the [insert Department/Program], I have not found any sustainability-related or -focused classes. But I very much benefit from your thoughts on the presence of sustainability themes within your Department's curriculum. If you have courses that you believe would fit these definitions, I would greatly appreciate your input. I would also appreciate learning your perspective concerning the role of sustainability within your [Department/Program] or the Colgate curriculum more generally.

Thank you for taking the time to help me complete this portion of this research project! If you have any other comments or questions please feel free to email me or request a meeting.

Sincerely,  
Jenna Taylor

To faculty in a department/program with potential courses related to sustainability

Dear Professor \_\_\_\_\_,

This semester, I am conducting an Independent Study in Environmental Studies on “The Role of Sustainability in Higher Education.” The purpose of this study is to investigate how Colgate compares with our peer institutions on specific dimensions of sustainability. In pursuit of this research goal, I am currently conducting an inventory of Colgate’s courses that address issues of sustainability.

John Pumilio, Colgate’s Director of Sustainability, has developed definitions for “sustainability-related courses” and “sustainability-focused courses” listed in our Climate Action Plan that I have adopted for this assessment.

- *Sustainability-related courses*: “If the course concentrated on two of the three dimensions of sustainability (economic prosperity, social well-being, or environmental health) and/or a major component of the course concentrated on a key sustainability principle or concept, then we considered the course sustainability-related”
- *Sustainability-focused courses*: “If the course *concentrated* on each of the main dimensions of sustainability (i.e., economic, social, and environmental), then we considered it sustainability-focused”

I have reviewed the courses offered within the [insert Department/Program], and assessed them according to AASHE STARS guidelines. These guidelines identify the following characteristics of course which can be classified as sustainability related or focused courses: *explore the connections between a chosen course of study and sustainability; develop skills to implement practical sustainable solutions; understand the way in which sustainable thinking and decision-making contributes to the process of creating solutions for current and emerging social, environmental, and economic crises; and/or synthesize understanding of social, economic, and environmental systems.*

Listed below are the courses I suggest focus on sustainability in your [Department/Program]:

- Sustainability-related:
- Sustainability-focused:

I would much appreciate your review of this list and the addition or deletion of any course to this list of sustainability-related or -focused courses, as defined above. I would also appreciate your perspectives concerning the role of sustainability within your department or the Colgate curriculum more generally.

Thank you for taking the time to help me complete this portion of this research project! If you have any other comments or questions please feel free to email me.

Sincerely,  
Jenna Taylor

## Appendix B: Revised Definitions of Sustainability Courses in the Curriculum

- *Sustainability-related courses*: The course concentrates on two of the three dimensions of sustainability (economic prosperity, social well-being, or environmental health) and/or a major component of the course concentrated on a key sustainability principle or concept. Also, the course helps “build knowledge about a component of sustainability or introduce students to sustainability concepts during part of the course. ...[They may provide] students with in-depth knowledge of a particular aspect or dimension of sustainability (such as the natural environment), ...a focus area (such as renewable energy) for a student’s sustainability studies, or they may broaden students’ understanding of sustainability from within different disciplines” (AASHE).
- *Sustainability-focused courses*: The course *concentrates* on each of the main dimensions of sustainability (i.e., economic, social, and environmental). Also, the course “provides valuable grounding in the concepts and principles of sustainability. These courses educate students about how different dimensions of sustainability relate to and support each other in theory and practice. In addition, these courses help equip students with the skills to weave together disparate components of sustainability in addressing complex issues” (AASHE).