

Acknowledgements

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Executive Summary

This report examines the importance of sustainability in higher education curricula. The overarching research question is to analyze where Colgate University falls the

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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. 46). A 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. More 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 and-focused courses. For instance, Colgate's peer institution, Saint Lawrence University, is implementing a mandatory sustainability class entitled "Environmental Literacy" (Lara-Cayá, 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 of 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. 104). However, we can embrace the evolving, inclusive qualities of sustainability, utilizing specific niches for improvement, such as sustainability enrichment within the curriculum. Distinct courses will deepen sustainability goals of higher education, connecting academia to

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

- Environmental Studies¹
 - 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)
 - g 50 0 0 Tmb:Environmental Issues

- ChemAltered & Natural Environment (CHEM 100)
- Environmental Chemistry (CHEM 477)
- Economics
 - Economic Development (ECON238)
 - Urban Economics (ECON 333)
 - Growth and Distribution (ECON 386)
 - Seminar in Economic Development (ECON438)
- Environmental Studies²
 - Social Science Perspectives on Environmental Issues (ENST 101)
 - Earth and Environmental Processes (ENST/CORE127/127L)
 - Environmental Ethics (ENST/PHIL 202)
 - Environmental Justice (ENST 232)
 - Global Environmental Health Issues (ENST233)
 - 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/PCON310)
 - Urban Geography (GEOG311)
 - Dispossession, Dislocation, and Disease: Geographies of Population Vulnerability (GEOG/PCON317)
 - Ecologies of the City (GEOG322)
 - Arctic Transformations (GEOG323)
 - International Environmental Policy (GEOG324)
 - Environmental Hazards (GEOG326)
 - Australia's Stolen Generation: The Legacies of Carrolup Extended Study (GEOG/PCON327E)
- Geology
 - Environmental Geology (GEOL 101/101L)
 - Hydrology and Surficial Geology (GEOL210)
 - Coastal Geology (GEOG326)

- History
 - American Environmental History (HIST 220)
- Liberal Arts Core Curriculum (spanning multiple departments/programs)
 - Introduction to Environmental Chemistry (CORE102S)
 - The Science and Potential Implications of Nanotechnology (CORE105S)
 - Conserving Nature (CORE 108S)
 - Earth and Environmental Processes (ENST 100/100L, CORE127/127L)
 - Global Change and You (CORE128S)
 - 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 (CORE166S)
 - The Arctic (CORE168Q)
 - North American Indians (CORE176Q)
- 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 (CORE176C)
 - Contemporary Issues in Native American Studies (MAST 302)
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- Religious Faith and Social Ethics (RELG/PCON333)
- Religion, Nature, and Environmentalism in South Africa (RELG 420)
- Sociology & Anthropology
 - Globalization, Culture, and Everyday Life (SOAN337)

Overall, the total 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 65% of Colgate's total courses are either sustainability-related or focused
- 15 out of 39 departments/programs offer at least one sustainability-related course, not including Colgate's General Arts Core Curriculum

In order to include the total number of courses that Colgate offers, I 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 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 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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& 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-related courses. For instance, Professors 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 on 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; Harvard and Middlebury College have sustainability degree-granting institutes. 6.3 BT 50 0 0 50 0 0 Tm /F1.0 1 Tf () Tj ET Q o.

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*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 and six peerschools that are ranked by AASHE STARS have approximately 9 percent of their total curriculum relating

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-

great moral and social changes 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 institutions 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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Bibliography

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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 Colgate

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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 courses" listed in 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

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 concept 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 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).