

CHAPTER 2

Sustainability Curriculum: Three Models for Transformation

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This chapter contains advice for building capacity and creating conditions for transformative sustainability curriculum to emerge. Most sustainability across the curriculum initiatives are started by one or two individuals who have the foresight, determination and opportunity to actualize curricula in this emerging field. But often there is no coherent approach within the institution, and procedural obstacles for introducing new courses or programs can exhaust the drivers.

Once colleges begin to develop sustainability curricula, Professional Development must soon follow, since learning to design and teach sustainability courses means learning to weave this new content into existing areas of expertise across disciplines. It is ultimately about transforming the curriculum and it changes the instructor: the way they think and teach will begin to shift. Chapter 4 will introduce models for Professional Development in Sustainability Curriculum, and Chapter 5 will focus on assessment methodologies to ensure improvement.

The goal of this chapter is to help curriculum designers and initiative champions get more colleagues around the table to buy in to curricular transformation. Having a plan and learning from what works and doesn't work at other colleges can help. One of the first ideas that will pop up might be something like "how about we develop some modules that all instructors can use?" While that sounds efficient, and could be a way of getting the faculty user to explore ways in which sustainability material relates to their own disciplines, it usually doesn't work because the accompanying transformation is not supported. You can't just stick it in without doing the complex work of acquiring sustainability knowledge.

Three models are presented: Infusion, New Courses, and New Programs, with pros and cons of each. Each model is explicated with an example from Bristol Community College, which is offered as a case study. Readers are invited to submit curricular case studies from their own campuses in response. How do you do differently? See survey link at end of the essay.

You will know which curricular model, or combination of models, will work on your campus. A helpful first step is to get the lay of the land on your campus: How is curriculum developed? Where do the rules come from? What are the state standards? Who tracks the meeting of general education requirements? Get to know the leaders on your campus to find out what mechanisms are most amenable.

INFUSION MODEL: SUSTAINABILITY ACROSS THE CURRICULUM

Infusion refers to sustainability material being woven throughout an academic educational experience. Infusion can take place within a course; throughout a major, certificate program or non-credit training; or across the entire college curricula. This method is usually faculty-driven and usually includes supported professional development and/or incentives for faculty. Infusion can also be student driven, like an Honors or Service-Learning option. Infusion is most often applied within a course. The infusion model works well at community colleges with articulation and transfer agreements with a four-year college, since new transfer level courses or programs have to be designed to articulate to a four year program.

PROS: At the course level, infusion requires that the subject matter of an existing offering becomes transformed so that traditional subject matter incorporates current ecological realities throughout the course. It can be implemented and piloted quickly since the change is with the instructor. Infusion requires the instructor to delve into sustainability knowledge and to redesign her/his course.

Infusion invites the instructor to engage in a deep exploration and understanding of the issues comprising sustainability. Furthermore, in so doing, it encourages the instructor to explore the paradigm shift from a "growth-driven society" to a "degrowth paradigm" and the numerous implications of this.

CONS: Infusion can be labor-intensive, not only in getting up to speed with existing knowledge, but in keeping up with the latest information and new developments in this emerging and evolving field.

Institutional support in the form of release time is most optimal to allow instructors the opportunity to become knowledgeable about sustainability and to explore ways in which this knowledge can be intertwined with traditional subject matter. Constrained college budgets combined with already over-worked faculty often means that no release time is available, thus requiring the instructor to carve out time from her/his personal schedule to prepare the course.

Example: Infusion Model

Jon Bjornson, head of BCC's Hospitality Program, illustrates a successful model in which sustainability education is filtered throughout every program course.

HOS121 – Throughout Introduction to Hospitality, participants discuss how wasting resources occurs in relation to the 15 areas covered in the textbook. Each chapter has a small green section that discusses Sustainability. Students' final papers are about Sustainability in the Hospitality Industry where by they identify and suggest ways that a local hotel can reduce wasting of resources.

HOS130 – Introduction to Geotourism focuses on local tourism in New Bedford, MA, and Cape Cod with themes of Sustainability woven throughout the course.

HOS132 – Geotourism Management is a continuation of

HOS130 and as such also focuses on local tourism and Sustainability efforts that local communities can make.

HOS137 – In Event Planning, participants discuss hosting a “green” event. Using china, crystal and silver will make the event classier; however, they can be tricky at an outdoor event, so how can you use environmentally friendly disposables? NO STYROFOAM!! Participants discuss recycling efforts at the event. Usually, people cooperate with recycling efforts if they see organizers making an attempt to separate paper, glass and plastic.

HOS223 – Convention Sales and Service discusses resource conservation in planning of conventions and how to promote these activities.

HOS224 – Hospitality Sales and Marketing takes the perspective of sustainability and how to market what a hotel company can do to be more sustainable. We discuss the importance of LEED-certified buildings and how hotels that advertise that fact actually draw in customers who are sustainability minded.

HOS226 – Accommodations and Lodging Management is the Capstone course, so by this time students have been exposed to Sustainability efforts in all the classes. Participants discuss what can be done to promote sustainability, and this is a major focus in their final paper about building a hotel.

HOS231 – Community-Based Tourism is the third course in our Geotourism Certificate program and it again focuses on helping a local tourism entity, similar to an internship. Emphasis is placed on Sustainability efforts.

NEW COURSE MODEL

1. New Course with Single Instructor

By “new course” we mean a newly developed course which has content that is focused entirely on a substantive area within the sustainability field (e.g., Green Engineering; Permaculture Design; Ecoliteracy, Education and Society, Green Business Practices). A new course is best integrated into the curricula if it meets one of the following criteria:

- Required course that is part of a major or certificate program
- Elective course that meets the requirements of majors and certificate programs
- Course that meets General Education requirements

PROS: While time and labor intensive, developing a new course from scratch can be an exciting and rewarding process, especially when approaching a new subject matter such as sustainability.

The new course can become the lightning rod for the development of other new courses - which, in turn, may lead to the institutionalization of an academic concentration or program in sustainability.

CONS: Creating a new course at a community college can be difficult, because many students rely on federal financial aid which will not pay for a class that does not fit into a degree. Veterans benefits have similar constraints that must be considered. Thus, it is best when designing a new course to make sure it meets already existing requirements (see above.) New courses allow the old courses to remain status quo, and can draw students away from existing courses, creating competition for enrollments.

2. New Multidisciplinary Course with Multiple Faculty

Co-teaching a course taught by two or more faculty is not new to academic settings, and certainly this is a mode that can be used in sustainability education - especially if at least one instructor has expertise in sustainability upon which the other instructor(s) can depend to help shape and guide the course. This can be accomplished in a Learning Community (pairing existing courses) or by designing a new multidisciplinary course.

PROS: This approach allows faculty who are interested in developing instructional material in sustainability, but who have little-to-no experience in this emerging field, to put together only one class session of material - a far less daunting task than developing an entire course. With guided assistance (suggested literature, websites, films, experts-in-the-field, consults) from a sustainability colleague, faculty new to sustainability can begin to put together strong lecture materials, assignments, and activities appropriate to their own discipline. (And once they have prepared this material, they tend to introduce that material into their other courses.)

In addition, a multidisciplinary course allows faculty from a wide range of fields to present their discipline's sustainability perspective to students who might not ever take a course in that area of study (e.g. a culinary arts major is unlikely to take a course in energy engineeringand vice-versa). Thus, their view of the world, and of sustainability issues, is widened substantially. They see that sustainability thinking is not relegated to one or two areas of study (typically engineering or environmental studies), but rather, it is relevant and applicable to a wide range of study.

CONS: The administrative requirements of a multidisciplinary, multi-instructor course can be complex. One individual must make sure that the presenting-faculty and students have no glitches in doing evaluation assignments; that final course grades are calculated from each faculty's evaluation requirement; that there is relative coherency in the order of presentations; and that faculty get paid. It is critical that there is a coordinator who has release time to organize and to administer the course. This can be a problem if budget constraints or lack of will on the part of the college administration prohibit release time opportunities.

Example: New Course Model

Bristol Community College designed multi-disciplinary course taught by 12 instructors (- 12 Faculty). Several instructors already have expertise in focusing on sustainability within their fields; others are new to thinking about sustainability and how it relates to their disciplines. Thus far, instructors from Culinary Arts, Engineering-Energy, English-Ecoliteracy, Health Sciences, History, Hospitality Services, Oceanography, Physics, Psychology, Sociology, Sustainable Agriculture, and Water Management have participated in the course with each subject area having a turn at being "the topic of the week." In each class, the participating instructor presents sustainability challenges and solutions from her/his disciplinary perspective.

The class meets once a week (Fridays) for 2.5 hours, scheduled to avoid time conflicts with other courses and faculty meetings. Renumeration for the course is divided into 15 weeks, with the instructor of each presentation earning 1/15th of the course in-take total.

These are the Administrative Tasks for a Multidisciplinary, Multi-instructor course:

- Arrange which instructors will teach the course and establish a title for each presentation.
- Sequence and set dates for faculty presentations. Try to set dates for presentations so that each subject logically follows the preceding one (e.g. Culinary Arts follows Agriculture).
- Contact each instructor to set firm the date s/he has been given and, of course, rework if there is a time conflict. (For example, if the instructor plans to be at a conference the date s/he has been assigned, the administrator must connect with another instructor to exchange dates and to confirm the new dates with each instructor.)
- Construct the syllabus, including the name of each instructor, her/his presentation subject, the sequenced date of presentation, office number, phone extension and campus e-mail address.
- After each presentation, each instructor typically gives an out-of-class quiz or assignment to be graded by her/him. It can be set up on-line via IT or can be handed out at the end of the class.
- Each instructor is responsible for arranging how s/he will get the quizzes/assignments from the students, doing the grading and arranging for the graded work to be returned to the students.
- Students wanting to discuss a particular grade must contact the appropriate instructor during her/his office hours (For example, a student's question about water systems instructed by Robert Rak, or about the quiz/assignment, must be addressed to Robert Rak.)
- The administrator must get these grades weekly from the instructors so as to be able to calculate the final quiz/assignment score at the end of the semester.
- Typically, students are assigned a semester project to be presented orally in class at the end of the semester and to be written as a semester paper which is turned into the administrator. The administrator grades this work.

- Students also typically are required to do a final semester-review paper by considering materials throughout the course, the areas that most impacted their thinking and why, and what they think they ultimately learned by taking this course. The administrator grades this final paper.
- The administrator submits to the registrar the final grade for each student based on the averaged quiz scores, the end-of-semester project, and the semester-review paper.
- Typically, the administrator attends ALL classes, takes part in each class as a “student,” and keeps track of materials that have been presented in class. This is critical for doing the final evaluation of each student.
- Finally, the administrator oversees the running of the course and trouble-shoots any problems.

Example: New Course Syllabus

SUSTAINABILITY FROM DIFFERENT PERSPECTIVES				
12 FACULTY				
SPRING 2018				
Sustainability from Different Perspectives - 12 Faculty		SUS104	Instructors: 12 Faculty	
Course Administrator: Nancy Lee Wood, Ph.D.			F: 11:00 am-1:45 pm, Room: E201	
Bristol Community College-Fall River Campus			Spring Semester 2018	
FACULTY/DATE	TOPICS	Office	Phone Ext.	
Nancy Lee Wood NancyLee.Wood@bristolcc.edu	1/26 Introduction (Getting Up to Speed! Facts-Figures)	E112	2043	
Robert Rak Robert.Rak@bristolcc.edu	2/02 Burn, Baby, Burn (Fuels and Energy)	E219	2771	
Robert Rak Robert.Rak@bristolcc.edu	2/09 Splash, Breath and Bake (Water, Air and Climate)	E219	2771	
Mary Rapien Mary.Rapien@bristolcc.edu	2/16 Marine Life and the Oceans (A View from the Seas)	L218	3763	
James Corven James.Corven@bristolcc.edu	2/23 Feeding Billions (Earth, Food and Agriculture)	E111	3047	
Rebecca Benya-Soderbom	3/02 Rise of the Oil Age (The View in Hindsight)	E221	2805	

Rebecca.Benya-Soderbom@bristolcc.edu

SEMESTER BREAK March 11-17

Stephan Martin 3/09 Shifting World Views On-line/SKYPE
(Sustainability and Cosmology)

Stephan.Martin@bristolcc.edu

Engin Atasay 3/23 Ecoliteracy, Education and Society E115 2573

engin.Atasay@bristolcc.edu

Rita DeOliveira 3/30 Psychological Dimensions L219 3536
of Ecological Change and Loss

Rita.DeOliveira@bristolcc.edu

Dale Bryan 4/06 Ecological Bases of Conflict TBA
and Terrorism

E. Jon Bjornson 4/13 Sustainable Hospitality K223 3143
(Getting Down to Business)

EJon.Bjornson@bristolcc.edu

Esteban Martinez 4/20 Food for Thought G216 2833
(Sustainability and Culinary Arts)

Esteban.Martinez@bristolcc.edu

DebraAnn Quenga 4/27 Health and Healthcare C206 2704
(Sustainable Practices)

DebraAnn.Quenga@bristolcc.edu

Nancy Lee Wood 5/04 Knowledge as Power E112 2043
(Walking the Walk!)

NancyLee.Wood@bristolcc.edu

FINAL PROJECTS FINAL EXAM WEEK FRIDAY - MAY 18, 2018

COURSE DESCRIPTION:

This multi-disciplinary course is designed to introduce students to key environmental and ecological crises facing humankind with an emphasis on sustainability issues and responses from different disciplinary perspectives. Taught by twelve faculty representing several different areas of knowledge including agriculture, business, conflict and peace, culinary arts, engineering, health care, history, literature, oceanography, physics, socio-environmental policy, sociology, and water sciences, this course serves as an introduction to the basic concepts of climate change, resource depletions and species extinctions while focusing on adaptation responses from various disciplinary perspectives.

COURSE OUTCOMES:

1. Use fundamental language, concepts and theories in describing how the planet functions, its relevance to societal health and its criticality in the continuance of civilization.
2. Articulate the ways in which human activity affects the planet and the ways in which the planet responds.
3. Identify multiple ecological crises facing humankind, the ways in which they affect various areas of work life, and adaptation methods being developed to address these crises in an effort to move toward a sustainable and resilient future.
4. Engage in systemic and critical thinking as a prelude to strategizing and actualizing sustainability practices, particular as they relate to work and professional life.
5. Appreciate a sense of connectedness with ideas and practices beyond one's own areas of knowledge and expertise.
6. Practice planetary citizenship by adapting one's own life - home, school, work, and community - to idea and practices of sustainability.

REQUIRED READINGS AND MATERIALS:

There is no textbook for this course. Each instructor will assign her/his readings as they relate to the specific topic she/he is covering. Students are expected to use the Internet.

READING SCHEDULE:

Each instructor will post assigned readings by Sunday night of the week of her/his presentation. Students are urged to complete readings prior to the class as they are integral to each class discussion.

TEACHING PROCEDURES: Readings, lectures, Internet searches, film presentations and class discussions comprise the methods of instruction used throughout this course.

CONTACTING INSTRUCTORS: If you have questions regarding material presented by a specific instructor, please contact her/him during her/his office hours. See above for e-mail addresses, phone extensions, and office room numbers. For questions regarding the course in general, contact the course administrator: NancyLee.Wood@bristolcc.edu, extension 2043, Room E112.

EVALUATION REQUIREMENTS:

50% Quizzes

After each faculty presentation, the instructor will give questions for a take-home quiz that is to be completed by students and brought to the next class to be collected by that day's instructor. The quizzes will be returned to students the following week by the instructor who is teaching on that day. Quizzes must be submitted on the "due date." Late quizzes will not be accepted and no make-up quizzes will be given. The two lowest scored quizzes will be dropped from the final quiz score calculations at the end of the semester.

25% Poster Project

Each student will choose an area of interest related to this course and create an educational poster to be presented to the class on the last day of the course. Students will present her/his poster, give an oral presentation explaining its relevance to the course and use it as a teaching tool for the rest of the class. Each student is to choose a topic that is approved by NL Wood by the 4th week of class (Feb. 13th). A specific topic cannot be covered by more than one student.

25% Reflection paper (5-to-6 pages due in lieu of a final exam). The guidelines for the reflection paper will be given to students two weeks before the scheduled date of the final exam. It is due during the final exam date and time scheduled for this course.

NEW PROGRAMS MODEL

The fact that entire new degree and certificate programs focused on sustainability are being developed indicates that this area of knowledge is increasingly viewed as critical to community college education.

PROS: Depending on the department or division of the college in which it is housed, a Sustainability Program may require a good deal of cross-disciplinary buy-in from faculty. It is not only critical that all participants in the new program "have a seat at the table" in deciding what the program will look like, but it is essential to develop a cooperative collegial spirit from the very beginning to insure the success of the program. The intellectual give-and-take of several colleagues around the table can unleash a plethora of ideas and possibilities

CONS: This process is time and labor intensive. Developing a new program, whether it be for a degree or a certificate, requires buy-in from multiple actors - several faculty, the curricula development committee, the college administration, the Board of Trustees, and often the State Board of Higher Education - all of which takes a good deal of cooperation, communication, patience, and time.

It requires that at least one individual has release time to initiate the process of faculty participation, conceptualize the program and its rationale, nail down course content, oversee the nitty-gritty details and paper work, guide the program through the curricula committee, negotiate administrative and State hurdles, and finally, actualize the program. Budget constraints, administrative waffling, personality conflicts, and multiple unanticipated snags can slow the process....or undermine it all together.

At Bristol Community College, there are three programs specifically that have been developed as sustainability programs: Green Engineering, Sustainable Agriculture, and, the newest addition, the Liberal Arts/Sustainability Studies Program. All three programs offer Certificates as well as Degrees. (See appendix for the description of BCC's newest, social science-based Liberal Arts/Sustainability Studies Program.)

Example: New Program Model

Because the field of Sustainability Studies from a Social Science base is very new without comparable models, we decided to establish a Liberal Arts Major with a Sustainability Concentration in order to fast track the program through the MA Board of Higher Education. Even then it was several months before the Board finally approved it.

Degree offered: Associate in Science in Liberal Arts and Sciences (Sustainability Studies)
Credits required: 60-63

The goal of this interdisciplinary program is to provide students the opportunity to delve deeply into societal issues of sustainability and to develop appropriate knowledge and

responses to meet current and future ecological challenges. The Sustainability Studies program prepares students to recognize and address sustainability issues in multiple social settings, including work, school, community engagement, civic life, volunteerism, and home life.

Program Information:

- The Sustainability Studies Program immerses students in the societal impacts related to climate change and resource depletions.
- Students are prepared to recognize, anticipate and respond appropriately to ecological challenges in multiple settings.
- It encourages students to consider practical human dimensions of climate change and resource depletion events.
- Study in a cluster allows students to envision and apply sustainability knowledge to a specific field.
- Hands-on experience provides students with practical knowledge and skills to address ecological challenges.

The program prepares students to:

- Graduates will be able to work as sustainability coordinators, sustainability consultants, recycling directors, waste reduction specialists, environmental responsibility analysts, and resource management specialists.
- Graduates may be employed within public and private sectors, governmental and non-governmental agencies, and profit and non-profit organizations. Among the areas of employment are social and human service agencies, school departments and districts, colleges and universities, socio-economic development agencies, restaurant and hospitality services, business and industry, hospital and nursing home operations and community planning boards.
- Graduates may continue their studies at a four-year degree-granting institution in Sustainability Studies. Depending on the area of concentration chosen, students may continue in Engineering, Health and Health Sciences, Hospitality, Sustainable Agriculture, Ecological Sciences or Water Management.

Student Learning Outcomes:

- Identify existing sustainability threats and challenges within multiple societal settings and to address them with appropriate mitigation and adaptation responses.
- Anticipate sustainability threats and challenges within multiple societal settings and to address them with appropriate mitigation and adaptation responses.
- Think systematically and critically, making connections among sectors of complex social systems.
- Work effectively with community people and local agencies addressing sustainability challenges.

- Articulate clearly through writing and oral practice issues of sustainability and adaptation responses.
- Continue college/university education in Sustainability Studies or related fields having developed the foundations through this program.



National Council for
Science and the Environment

Thank you for reading this chapter of the NCSE Community College Handbook for Sustainability Education and Operations.

Does your institution do something different in this area?
Do you have a project, program, or innovation in practice in this area?

[Please consider submitting a case study to NCSE.](#)

NCSE will review your case study and an NCSE team member will reach out to you for additional information. The case study may be included in the NCSE Community College Handbook for Sustainability Education and Operations.