

Ecological Restoration as the Imperative to Societal Stability

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There are at least four critical areas needed to be developed to ensure, not only sustainability, but **RESILIENCE**, if we are to live in viable societies rooted in ecological stability.

Early Childhood Education that continues throughout schooling whereby young people learn about, experience, and come to appreciate (and love) the natural world – especially within a place-based setting to which one identifies and to which one develops a deep sense of belonging.

Technological Innovation that coincides with the functioning of the natural world, that minimizes the extraction of finite resources, and that through conservation-oriented practices optimizes the use of nature’s bounties. Developing infrastructures, material items, strategies, and mindsets based on principles of biomimicry are critical in this process.

Climate Awareness, Environmental Stewardship, and Social Justice are interconnected and necessary requirements in creating viable societies. These goals require profound and fundamental economic, political, social, and cultural transformations that (re)connect humankind with the natural world - and with each other. (Re)localization of daily life is central to actualizing these goals.

Regenerative Land Management that restores Earth’s bio-systems and biodiversity through massive reforestation programs, wetland and coastal restoration, prairie and grassland regeneration, and permaculture practices in small-to-medium range agricultural schemes.

For the sake of brevity, this essay is focused on **Regenerative Land Management** and its criticality as the foundation of societal stability. While the three other areas mentioned are of immense and related importance, they recede into the background as it becomes increasingly and alarmingly clear that humankind has been playing a kind of “ecological Russian roulette” that not only threatens the lives of numerous other species - thus creating massive biodiversity loss, but that also imperils humankind’s own continued existence resulting from climate chaos.

If we are, in fact, to create not only sustainable - but resilient - societies, humankind **MUST** re-enter the space of nature.

The current global human population stands at 7.5 billion people with a projected rise to 9.5-to-10 billion by mid-century – 8 billion of whom will be living in cities. Water, food, habitats, and a stable climate are - and increasingly will be - critical for societal stability. Stresses and disruptions on these basic human requirements – food, water, and shelter – are core to societal well-being – and that well-being depends on ecological stability. Alfred Henry Lewis’s statement, “There are only nine meals between mankind and anarchy” rings truer than ever.

The key questions are, “How do we meet the basic needs of 10 billion people in order to maintain societal stability?” Think Arab Spring and Syria – extreme food and water stresses resulting in horrific conflicts, extreme violence, and mass migrations. “What must we do to avoid such chaos and how must we go about doing it?”

Humankind has been living in a linear, extractive economy on a finite planet, ignoring the reality of Earth's limits. In the process, we have now reached the point whereby nature is producing feedback loops in the form of dangerous hydrological climate extremes – hurricanes, floods, sea level rise, coastal erosion - followed by droughts and aridification – prime conditions for potable water scarcity and wildfires like we've seen recently in Paradise, California; Alaska; northern Canada; Siberia; Brazil; Africa; and Australia. What we're witnessing is the collapse of bio-systems, thus, creating ecological disruptions that are inducing societal havoc (e.g., hurricanes in The Bahamas and Puerto Rico; cyclones in Mozambique; aridification-driven wildfires in California).

Worldwide, millions of acres of deciduous and tropical forests, prairies, grasslands, and wetlands have been destroyed to make way for industrial agriculture and urbanization. As an example of the extent of disruption, since the onset of agriculture, some 10,000 years ago, humankind has lost three trillion trees – fully half of that with which we began. With it has come massive disruption of Earth's "soil sponge," resulting in an increasingly diminished capacity for carbon sequestration and life-threatening losses of biodiversity – all of which have fast-forwarded in the age of fossil fuels.

We must understand that ecological stability is central to societal stability. This means educating EVERY student about the fundamental workings of Earth's systems – particularly identifying the characteristics of carbon-rich "healthy soils,"; understanding the processes of how to restore degraded lands to obtain healthy soil; knowing about the imperatives of biodiversity – to human well-being as well as to other life forms; making the connections between a balanced carbon cycle and its relationship to restoring an ecologically sound hydrological system – AND understanding the peril we put ourselves in if we continue to ignore our dependence on nature.

As recognized by world-renowned climatologist, James Hanson, and an increasing number of climate scientists and climate activists, we have gone past the point in which technological innovations are sufficient to solve the climate crisis – with all of its devastating impacts. We MUST seek safe nature-based solutions to accelerate CO2 drawdown, reinvigorate biodiversity, and restore Earth's hydrological cycle IF we are to enjoy a viable future – sustainable AND resilient.

The above nature-based message permeates the core courses within the Sustainability Studies Program at Bristol Community College. Throughout the curriculum, students revisit the concept of "nature-based solutions" and focus on how that concept relates to each course. Below is a brief history and general description of the Sustainability Studies Program and its courses.

Rationale for a Social Science-Based Sustainability Program – How it Began

In the last few years, with climate change events becoming more frequent, it was apparent in teaching standard Introductory Sociology courses that most students were completely unaware of the threats and dangers of the extent of climate change disruptions and their impacts on human societies. Typically, students had heard the terms climate change, global warming, and, perhaps something about sustainability, but they were vague in understanding their meanings and completely unaware of their profound implications for societal disruptions. Moreover, thanks to

the deliberate undermining of scientific data by stake holders in the fossil fuel industries - particularly in the United States and exacerbated by a compliant media failing to conduct and deliver to the public investigative reporting on the subject, students expressed confusion and doubt as to whether or not climate change was even real. Besides, if it actually was occurring, impacts would be felt in the distant future – not in their lifetimes and, thus, there was nothing to worry about now.

Their opinions mirrored the general public's lack of knowledge and skepticism in the United States. Given the rapidity and urgency of climate change events, it became evident that sustainability education based in the Social Sciences was imperative. Students in many programs of environmental studies, engineering, and to some extent in business and agriculture, were being exposed to some aspects of climate change - particularly in the need to reduce CO2 emissions. However, most students outside of these fields were not being exposed to any sound knowledge-based information and even most students in those fields mentioned above were privy to only a minuscule understanding of the wide-ranging ramifications of climate change events facing humankind.

Exacerbating the problem was, and remains, the fact that professionals doing "hard science" have long been inept in the ability to convey scientific information in a language and in concepts accessible to the layperson and to make the connections between their research findings and the potential ramifications for society.

Thus, it became evident that this deep chasm must be filled, not simply for the sake of academic knowledge, but as a moral imperative in preparing youth for what promises to be tumultuous times ahead.

Laying the Foundation

Enlisting interested faculty from Biology, Engineering, Environmental Studies, Hospitality, Sociology, and Sustainable Agriculture over the course of a year-long series of meetings, colleagues created a core curriculum reflective of broad areas of environmental and ecological concerns. The intent was to give a basic overview of ecological crises, present the crises from a wide-range of perspectives, explore resilient responses and sustainable adaptations, and apply this knowledge to a vocational track. In the process, students would learn to determine legitimacy of methods and information lodged in media reports, learn to write cogently about environmental matters, develop skills in public speaking, and become facile in digital photography - all in anticipation that professionals in the field would need these skills to communicate information effectively to the general public.

As it turned out, because of the Social Science-based nature of this process, much of the content envisioned by the creators of the program reflected concerns addressed by the United Nations Sustainable Development Goals.

This new program would require the development of "core" courses as well as the inclusion of previously existing ones. It also would require "TRACKS" of vocational training to which the Social Science-based knowledge could be applied.

The Program Goals Statement is as follows:

"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 socio-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."

Embedded throughout the Sustainability Studies Program are the following concerns:

- Climate Change/Global Warming - causes, events, impacts, and responses
- Realities of Resource Depletions and Stresses - arable land, food production
potable water, fossil fuels, ores, minerals
- Biodiversity losses - causes, events, impacts, and responses
- Recognition of inevitable economic contraction - economy rooted in nature
- Nature-based solutions as central to mitigation and adaptation strategies
- Human Rights and Climate Justice - necessary components for viable, just
sustainability

Program Information

The Sustainability Studies Program immerses students in learning about the societal and ecological impacts of climate change events, resource depletions, loss of biodiversity, and numerous other assaults on the environment such as waste and plastics disposal. In the process, students are prepared to recognize, anticipate and respond appropriately to socio-ecological challenges in multiple settings and in multiple ways. Furthermore, through the requirement of studying in a "TRACK," students experience applying sustainability knowledge to a specific field. Finally, students become immersed in rethinking the meaning of human relationships, education, economy, and planetary stewardship.

Courses Comprising the Sustainability Studies Program

Below are descriptions and rationales for "CORE COURSES" in the Sustainability Studies Program. A starred (*) designation indicates that the course is new and has been developed specifically for the Sustainability Studies Program. An un-starred course indicates that the course was pre-existing but has become included in the program as a core course.

Note: Each course description below is as it appears in the college's on-line catalogue.
<http://bristolcc.smartcatalogiq.com/2019-2020/Catalog>

***SUS 101 Sustainability and Humankind's Dilemma: Life on a Tough New Planet**

This course focuses on fundamental sustainability crises confronting humankind in the face of climate change, peak oil, resource depletion, species extinction, and societal collapse. Areas covered include social-structural conditions driving ecological overshoot; human threats to natural systems; population and Earth's carrying capacity; globalization, poverty and failing states; environmentally-based national and transnational conflicts; emerging pathogens and diseases; systems analysis of societal complexity and systemic breakdown."

3 credits

Course Rationale

The purpose of this course is to introduce students to the multiple socio-ecological crises facing humankind in the age of the Anthropocene and to explore their systemic inter-connectivities. It is designed to give an introductory overview of the critical state of the planet and to explore how human activities, societal structures, and social forces have contributed to these numerous crises as well as shaped ecological discourse and practices. The "dilemma," of course, is "Does humankind continue on its current business-as-usual, incessant growth-oriented path, or does it "re-enter the space of nature" creating ways of living that are compatible with nature?"

***SUS 102 Resilient Sustainability: Preparing for the Future**

This course focuses in the multitude of socially-based adaption strategies currently emerging or in existence to meet the numerous sustainability crises facing humankind. Areas of study include the paradigm shift towards sustainable resilience: transitional sustainability movements; the New Urbanism and reconfiguration of the built environment; reinvigoration of community; education for employment in a post-carbon world; post industrialized agriculture and evolving alternative food systems; harnessing renewable energy; strengthening physical health and mental well-being; steady-state elements and the New Economy; bioregionalism and the nation-state; population stabilization and the eradication of poverty; "untrashing" the planet and its vital resources; sustainable conservation and curtailment practices leading to resilience.

3 credits

Course Rational

Intended as a follow-up to the previous course, **Resilient Sustainability: Preparing for the Future** introduces students to the multiple mitigation and adaptation strategies emerging or already in existence somewhere in the world and emphasizes that there are many potentially positive outcomes to challenges posed by the crises facing humankind. Representatives from several local environmental agencies are invited to give presentations, thus, acquainting students with the restorative work taking place in their own communities - and instilling the message, that they too, could become involved, even employed, in such activities.

***SUS 104 Sustainability from Different Perspectives - 12 Faculty**

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, 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, resources

depletions and species extinctions while focusing on adaptation responses from various disciplinary perspectives.

3 credits

Course Rationale

The rationale for this course is to emphasize that ecological realities affect nearly all areas of study and that various efforts are being sought and used to deal with the crises. The message is that no matter one's choice of study, one's chosen substantive area is having to deal with and find solutions for ecological and societal crises. As each participating faculty member presents one week of instruction concentrating on the critical problems viewed within that specific subject area and the relevant responses, varied and numerous socio-ecological issues are addressed.

***SUS 201 Sustainability, Human Rights, and Climate Justice**

This course focuses on the disproportional burdens associated with climate change that experts anticipate will be experienced by poor countries and poor populations, with emphasis on Africa, Asia and Small Island States. Substantive areas include the causes and consequences of uneven development and climate-driven threats and impacts on agriculture and food security; ecosystem goods and services; livelihoods and income generation; health, disease and pandemics; water and energy access; sea-rise and built-environmental infrastructure; sociopolitical destabilization, conflicts and terrorism; involuntary displacement and migration; and gender equity. Particular concerns center on international geo-political relations, global interconnectivity, nations' ethical responsibilities toward the poor in the face of climate crises, and transitional mitigation and adaptation responses.

3 credits

Course Rationale

The intent of this course is to impress upon students that ecological crises have real-life impacts on everyone, but particularly on poor countries and poor populations - those who have done the least to create climate change and who have enjoyed the fewest benefits of the fossil fuel age, but who are the most vulnerable and who suffer the greatest hardships from climate change and other socio-ecological impacts. It also is intended that students learn to appreciate the interconnectivity of the world and to understand that seemingly far away problems can appear on one's own doorstep with relative ease and speed, (e.g., sea level rise forcing populations in island nations to migrate to other countries). Particular emphasis is on recognizing that human rights and climate justice are necessary for societal stability and are requisites if there is to be a genuinely sustainable future.

***SUS 203 Sustainable Economics: The Rise of the New Economy**

This course focuses on the contradictions within contemporary capitalism, their impacts on the physical and human environment, and the emerging economic transformation. Issues addressed include the future of economic growth and globalization; impacts on consumer society; the rise of natural and human capital; steady state, gift and shared economics; participatory budgeting; re-localization of labor; cooperatives and worker-owned production; emerging small businesses; developmental of local and regional currencies; bio-regional productions; and alternative finance and banking systems.

3 credits

Course Rationale

The goal of this course is to introduce students to alternative modes of "doing" economy - with an emphasis on exploring numerous examples of economic activity from around the world that promotes individual agency, community well-being, societal resilience, and ecological vitality. Throughout the course, students learn to articulate the interconnections between society and economy. They come to understand the fundamental structure of globalized capitalism, and discern ways in which the contemporary dominant continual-growth economic system undermines ecological health and societal sustainability.

***SCI 110 Science vs Pseudoscience**

Every day the public is faced with news of new scientific findings that have a great impact on their lives and health - from the latest causes of cancer to the dire predictions of climate science. This course is aimed at Sustainability majors and non-science majors, to help them gain an understanding of how science is done. Topics include the peer review process, common experimental designs, the importance of sample size, interpreting graphs and statistics, and the role of the media in conveying science. This course provides students with the tools to help them critically evaluate science in the news.

3 credits

Course Rationale

Keeping the lay public in mind, the intent of this course is to teach students how to critically read and evaluate secondary sources of science news in an effort to distinguish between legitimate scientific reporting and bogus representations of scientific information. Emphasis is placed on learning the fundamental features of the scientific process including hypothesis generation, controlled experimentation, and peer review.

HUM 150 Ecoliteracy, Education and Society

This course investigates how educational theory and practice should respond to 21st Century ecological challenges such as climate change, health and food crises, degradation of culture, language and knowledge, as well as the destruction of sustainable indigenous practices and other convivial social relationships under globalization. Through a vigorous survey of contemporary postindustrial society, the course tries to offer practical and theoretical venues for sustainable educational experiences. Students are introduced to multiple educational perspectives to literacy and learning, which address the crucial inter-relationship of all life and all living things, in an effort to foster sustainable and democratic sensibilities of learning, knowledge, and society.

3 credits

Course Rationale

This multidisciplinary course makes the connections between culture and nature with a focus on developing sustainable and resilient relationships between cultural diversity and biodiversity. Through a critical socio-political pedagogical lens, it explores the socio-economic forces that destroy biodiversity and cultural diversity in the processes contemporary post-industrialized globalization. Moreover, it is designed especially to explore innovative educational frameworks that cultivate equity, justice and sustainability across cultures and of human interaction with the natural world.

SOC 253 Environmental Sociology: Ecology and the Built Environment

This course is a survey course of contemporary environmental and social science theory, research and data analysis. It explores the social construction of reality, the role of the corporate and social media, as well as, public policy formation and its consequences for humanity, civilization and the biosphere. The course concludes with an analysis of creative responses to environmental crises and their impact in human consciousness, education, science, culture, society, social movements, social change, human rights, environmental, social and economic justice, and revolution. It explores alternatives to the old infinite growth model of economics and social organization.

3 credits

Course Rationale

It is critical that students gain insight into the historical, cultural, social, economic, political and scientific processes that have led to the current environmental crises - particularly as they relate to the built environment. Learning to recognize and assess the potential outcomes of various policy decisions, students can project the potential impact on their own lives, their community, and on civilization as a whole. Grounded in integrated ecological principles and concepts, students produce individual and collective action plans for dealing with built-environment crises.

***SUS 204 Civic Engagement: Sustainability Capstone Project**

This field intensive course serves as the student's civic engagement capstone experience after having completed, or taken simultaneously, the pre-requisite Sustainability courses. It is designed for students to apply the knowledge and skills gained via the Sustainability courses to a real-world situation in the field, chosen by the student in collaboration with her/his Capstone Faculty Advisor. Each student will spend a minimum of 6 hours per week in the field at the chosen site and meet weekly with the Capstone Faculty Advisor to review progress in the field. Prerequisites: SUS 101, SUS 102, SUS 201, SUS 203, SCI 110, HUM 150.

3 credits

Course Rationale

The purpose of this capstone course is to create opportunities for students to apply their new-found sustainability knowledge to real-life professional settings. Assisted by the Program Coordinator, students locate a site where they can intern for a semester. During this time students observe the site, identifying, recommending, and developing practices that enhance sustainability adaptations and solutions within the organizational setting.

TRACKS

In addition to the CORE courses, students are required to choose a TRACK to which they apply their Social-Science-based sustainability knowledge. Each TRACK is comprised of three already existing courses, chosen by Department Heads, deemed appropriate for the Program.

Elementary Education

- Philosophy of Education
- Language, Education and Literacy
- Diversity and Multicultural Education

Engineering

Introduction to Sustainable and Green Energy Technologies
Introduction to Environment
Energy Efficiency and Conservation Measures

Environmental Studies

Introduction to Sustainable and Green Energy Technologies
Introduction to Environment
Water Supply and Hydrology

Health and Health Sciences

Physiology of Wellness
Introduction to Nutrition
Personal and Community Health

Hospitality Services

Introduction to Travel, Tourism, and Hospitality
Hospitality Sales and Customer Service
Hotel Accommodations Management

Ocean Science

Principles of Ecology
Coastal Science
Introduction to Oceanography

Sustainable Agriculture

Sustainable Agriculture I
Sustainable Agriculture II
Food, Famine, and Farming in the Global Village

Water Management

Introduction to Environment
Wastewater Technology I
Water Supply and Hydrology

Finally, because it is anticipated that students will be required to communicate about sustainability matters in whatever setting in which they find themselves, they are required to take a course in English Writing, in Public Speaking, and in Digital Photography.

The Sustainability Certificate Program

Upon completion of the curriculum for the Associate Arts Degree, it was evident that a Certificate Program could be created by selecting key courses from the major.

While the Sustainability Studies Certificate is intended for people who already are working in a field and want to learn basic sustainability education to apply to their jobs, it also is opened to

anyone wanting this knowledge, including students simultaneously pursuing degrees in other disciplines.

The Sustainability Studies Certificate Program has a 28-credit course requirement and does not include a TRACK, nor the Capstone experience. Students are required to take all the CORE courses with the exception that they may choose between Environmental Sociology or Sustainability, Human Rights and Climate Justice. As in the major, students also are required to take the courses in English Writing, Public Speaking, and Digital Photography.

What One Can Do with this Knowledge after Graduation

- 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.

<http://bristolcc.smartcatalogiq.com/2019-2020/Catalog/Programs-of-Study-By-Area-of-Study/Division-of-Behavioral-Sciences-and-Education/Liberal-Arts-and-Sciences/Sustainable-Agriculture>

Final Thoughts

This Social-Science-based Sustainability Studies Program was four years in the making. Having gone through conceptualization and course development, multiple Curriculum Committee technical revisions, College Administration and Board of Trustee reviews, and finally, the MA State Board of Higher Education, the program was launched in the fall semester of 2017. Along the way it was decided that this "emerging discipline" would have the greatest chance of being accepted by the MA State Board of Higher Education if it was introduced as a Liberal Arts Major with a concentration in Sustainability Studies - thus the AA degree is in Liberal Arts/Sustainability Studies.

This obviously is a young program in a new field and, as such, is an evolving work in progress. It is unconventional in its structure and, thus, does not fit neatly into a conventional academic pattern. However, this Sustainability Studies Program, both degree and certificate, could be adopted by other community colleges as well as by four-year institutions in preparing students, not only for socio-ecologically based disruptions occurring in the future, but for careers in the emerging field of Sustainability. Given the urgency of the multiple socio-ecological crises now occurring, such an adoption would not be a moment too soon.

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