



*Sustainability
MINOR*

Clemson University

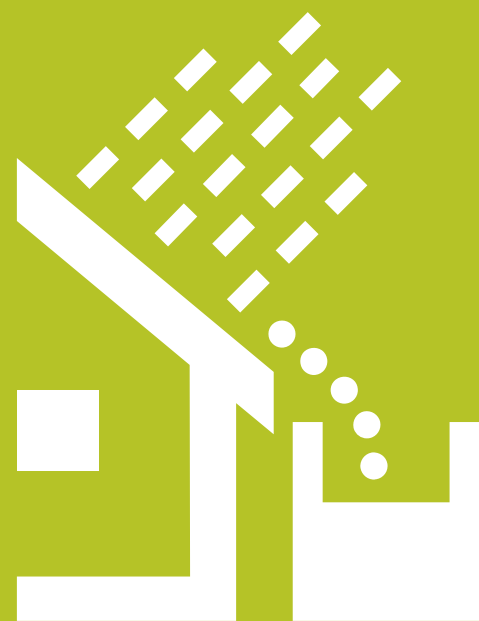


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MINOR OVERVIEW

The sustainability minor, which is open to all majors, is one of the first of its kind. The program is designed to familiarize students with the core values of sustainability, and gain an in-depth knowledge of why and how sustainability is approached.



what is sustainability?

Sustainability is defined as striving to meet the needs of the present without compromising the ability of future generations to meet their own needs.

The minor addresses the three tiers of sustainability:

social



economic



environmental





*learning
outcomes*



learning outcomes

scales of sustainability

- Define sustainability in 3 dimensions (environmental, social, economic)
- Apply sustainability concepts on local and global scales
- Integrate sustainability study into the surrounding community
- Evaluate the history of development through mercantilism, imperialism, and capitalism
- Assess the long term cultural and environmental impacts that shape our world today

Learning outcomes

fundamental issues of sustainability



- Evaluate current and potential future impacts of sustainability issues including: Global climate and climate change, food, energy, water, and environmental degradation
- Evaluate how sustainability impacts social and intergenerational justice



learning outcomes

systems thinking for sustainability

- Understand basic principles of systems thinking
- Evaluate the role of their major in sustainability issues
- Recognize interrelated systems

Learning outcomes

Evaluate tools for implementing + measuring sustainability



- Evaluate the costs and benefits of sustainability (see that it is not always more expensive)
- Perform a Life cycle analysis and assessment
- Measure impacts of point source pollution prevention; and cradle-to-cradle and lean manufacturing



learning outcomes

change agents for sustainability

- Practice change agent skills for sustainability
- Practice group processes
- Identify and address the root of problems, even when it seems to go against the status quo or social norms
- Apply a new or changed mindset to your personal life

credits

12 credits of courses focused on sustainability issues

3 credits of approved engagement activities (Creative Inquiry, study abroad, co-ops) that focus on sustainability issues

3 credit foundation course CU 2010: Sustainability Leadership



credits

At least 9 credits must be selected from 3000- or 4000-level courses. At least 3 and no more than 9 credits must be from courses addressing the social dimension of sustainability.

Engagement activities will be approved by the CU 2010 instructors if they meet the learning objectives for the minor.

Courses that are not on the approved list as eligible for minor credit may be submitted to the CU 2010 instructors for approval.

CU 2010

Course Description

Participants, representing Clemson's diverse student body, will learn and apply critical thinking skills to understand economic, social, and environmental sustainability in such contexts as personal lifestyle choices, the structure of the built environment, and the operation of public and private institutions. Participants will also develop and practice skills to act as agents of change in the University and the broader community.



CW 2010

Instructors

Dr. Leidy Klotz, Civ.Engr.
Jennifer Goree, M.Education
Nicole Barclay, M.Civ.Engr.



Guest Lecturers

Dr. Catherine Mobley, Soc./Anthro.
Freddy Paige, M.Civ.Engr.
Dr. Kalan Ickes, Biological Sciences
Tony Putnam, Director of Utilities
Dr. Ellen Vincent, Ag. + Env. Science
Dr. Vincent Blouin, Architecture
Dr. David Ladner, Environmental Engr.

CU 2010

Discussion Leadership

With the assistance of an approved contributor/faculty member, a group of 4 or 5 students leads a class discussion on a sustainability topic of their choosing. Groups often take their fellow students outside the classroom to other parts of campus for a more immersive experience. Past discussions have taken place in Lee Hall III, the Student Organic Farm, and Clemson's Energy Facility.



CW 2010



pechakucha™ presentations

Each student creates a PechaKucha™ presentation that represents and describes their personal sustainability goals for the next 5 years or a plan for Clemson University that will help us reach our sustainability goals and how this is to be done.



List of Courses

list of courses

AGM 3010 Soil and Water Conservation

APEC 2570 Natural Resources, Environment, and Economics

APEC 3570 Natural Resource Economics

APEC 4570* Natural Resource Use, Technology and Policy

ARCH 4250 Energy in Architecture

ARCH 4710* Architectural History of Place

ARCH 4720* Architectural Field Studies

BE 4080 Land Treatment of Wastewater and Sludges

BE/EES/FOR 4510 Newman Seminar and Lecture Series in Natural Resources Engineering

BE 4240 Ecological Engineering

BE 4400/CE 4400 Sustainable Energy Engineering

BE 4401/CE 4401 Sustainable Energy Engineering Laboratory

BE 4640 Non-Point Source Management in Engineered Ecosystems

BIOL 2040* Environment, Energy and Society

BIOL 3130 Conservation Biology



*Courses with an asterisk
(highlighted in **orange**) satisfy the
social sustainability requirement

list of courses

BIOL 4410 Ecology
BIOL 4860 Natural History
BT 2200 Biosystems Technology I
BT 2201 Biosystems Technology I Laboratory
BT 2400 Biosystems Technology II
BT 2401 Biosystems Technology II Laboratory
CE 4120 Urban Transportation Planning
CE 4360 Sustainable Construction
CE 4370 Sustainable Energy Project Design and Analysis
CHE 4500/6500 Chemical Reaction Engineering
COMM 3070* Public Communication of Science and Technology
ECE 4200 Renewable Energy Penetration on the Power Grid
ECE 4610 Fundamentals of Solar Energy
ECE/ME 4570 Fundamentals of Wind Power
ECE 4710 Electric Vehicles and Energy Storage
ECON 3190 Environmental Economics



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list of courses

EES 3030 Water Treatment Systems
EES 3040 Wastewater Treatment Systems
EES 4300 Air Pollution Engineering
EES 4800 Environmental Risk Assessment
EES 4840 Municipal Solid Waste Management
EES 4860 Environmental Sustainability
ENGL 4340* Environmental Literature
ENR 1010 Introduction to Environmental and Natural Resources
ENR 3120* Environmental Risks and Society
ENR 4130 Restoration Ecology
ENR 4290* Environmental Law and Policy
ENR 4500* Conservation Issues
ENSP/GEOL 1250 Sustainable Resource Use
ENSP 2000 Introduction to Environmental Science
ENSP 2010 Introduction to Environmental Science for Ed. Majors
ENSP 3150 Environment and Agriculture



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list of courses

ENSP 4000* Studies in Environmental Science

ENSP 4720 Environmental Planning and Control

ENT 3000 Environmental Entomology

ETOX 4000 Wildlife Toxicology

ETOX 4210 Chemical Sources and Fate in Environmental Systems

ETOX 4370 Ecotoxicology

ETOX 4460 Soil and Water Quality: Fundamentals

ETOX 4470 Soil and Water Quality: Applications

ETOX 4850 Environmental Soil Chemistry

FOR 4230 Current Issues in Natural Resources

FOR 4340 Geographic Information Systems for Landscape Planning

FOR 4650 Silviculture

FOR 4651 Silviculture Laboratory

GEOL 1120 Earth Resources

GEOL 1140 Earth Resources Laboratory

GEOL 1200 Natural Hazards



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list of courses

GEOL 2700* Experiences in Sustainable Development: Water

GEOL 3000 Environmental Geology

GEOL 4090* Environmental and Exploration Geophysics

GEOL 4091* Environmental and Exploration Geophysics Laboratory

HIST 1240* Environmental History Survey

HIST 3920* History of the Environment of the United States

HON 2060 Sustainable Energy Innovation

HON 2060 Experimental Forest

HORT 1010 Horticulture

HORT 3080 Sustainable Landscape Garden Design

HORT 3090 Sustainable Landscape Garden Design Laboratory

HORT 4560 Organic Vegetable Production

HORT 4561* Organic Vegetable Production Lab

HORT 4610* Advanced Landscape Garden Design

HORT 4611* Advanced Landscape Garden Design Laboratory

LARC 4230* Environmental Issues in Landscape Architecture



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list of courses

ME 4200 Energy Sources and Their Utilization

ME 4260 Nuclear Energy

MSE 4330 Combustion Systems and Environmental Emissions

PES 3350 Agricultural Biotechnology

PES 3351 Agricultural Biotechnology Laboratory

PES 4080 Land Treatment of Wastewater and Sludges

PES 4220 Major World Crops

PES 4230 Field Crops - Forages

PES 4450* Regulatory Issues and Policies

PES 4510* Agricultural Biotechnology and Global Society

PES 4900 Beneficial Soil Organisms in Plant Growth

PHIL 3260* Science and Values

PHIL 3400* Technology, Environment, and Sustainability

PHIL 3450* Environmental Ethics

PHSC 1070 Introduction to Earth Science

PHYS 2450 Physics of Global Climate Change



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list of courses

PHYS 4200 Atmospheric Physics

PKSC 3680* Packaging and Society

POSC 4160* Interest Groups and Social Movements

PRTM 4300* World Geography of Parks and Equivalent Reserves

RS 4010* Human Ecology

SOC 4030* Technology, Environment and Society

SOC 4330* Globalization and Social Change

SOC 4590* The Community

SOC 4710* Population Issues and Methods

STS 2150* A Critical Approach to the Global Challenge
of Technological Revolutions

WFB 3130 Conservation Biology

WFB 4180 Fishery Conservation

WFB 4300 Wildlife Conservation Policy



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*sustainability cl courses**

- 263 Projects for Sustainable Development in Recovering and Developing Communities
- 476 People-Place-Sustainability
- 632 Bacterial Biotechnology: Microbial Sensors & Enzyme Engineering
- 716 Novel Applications of Photovoltaics
- 827 Sustainable Landscape Demonstration Garden
- 955 Solar Power for Clemson University
- 1010 Site-specific Messaging: Communicating Food, Identity & Culture
- 1022 Engineering Yeast for Sustainable Production of Fuels, Chemicals, and Nutraceuticals

*list is a sample, not a comprehensive catalog

sustainability at clemson

For more information on sustainability at Clemson:

Clemson Sustainability website + Sustainability Report Card
clemson.edu/sustainability

Healthy Campus
clemson.edu/healthy-campus

Clemson Facilities
clemson.edu/facilities

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