Course Acronym:	SUST
Course Number:	202
Descriptive Title:	Global Sustainability & Integration
Division:	Industry and Technology
Department:	Environmental Technology
Course Disciplines:	Environmental Technology
Catalog Description:	This course is designed to prepare students to survey and evaluate systems of sustainable and conventional energy creation, energy distribution and energy management. The course introduces the developing rating systems that are quantifying and measuring green building and environmental system efficiency performance. "Green Regenerative" sciences and technologies will be emphasized. Areas of concentration will include: green building design and site selection, energy efficient designs and construction techniques, photovoltaic (PV) systems, solar thermal systems, wind energy, fuel cells, solid waste management, water conservation, and building energy rating systems.
Prerequisite:	Sustainable Design 201 with a minimum grade of C.
Co-requisite:	
Recommended Preparation:	Eligibility for English 1A
Enrollment Limitation:	
Hours Lecture (per week):	3
Hours Laboratory (per week):	0
Outside Study Hours:	6
Total Course Hours:	54
Course Units:	3
Grading Method:	Letter Grade only
Credit Status:	Credit, degree applicable
Transfer CSU:	Yes
Effective Date:	02/16/2010
Transfer UC:	No
Effective Date:	
General Education: ECC	
Term:	
Other:	

CSU GE:	
Term:	
Other:	
IGETC:	
Term:	
Other:	
Student Learning Outcomes:	**SLO #1 Sustainability Systems Models & Diagrams** Given instruction in the sustainable systems that make up an urban environment, the student will create models and diagrams on the processes of how these systems react to one another and work together on a macro and/or regional scale. **SLO #2 Leadership in Energy and Environmental Design (LEED)** Given instruction in the system of LEED rating, a student will evaluate the design process to incorporate as many of the LEED principles into the design project of the course. **SLO #3 Residential Home Design** Given instructions in the systems that make up many of the sustainable building components, including LEED and/or other rating systems, a student will design an environmentally friendly building site and incorporate the various systems into a residential home.
Course Objectives:	1. Describe and discuss various sources of energy currently being used, including newer alternatives and/ or renewable energy sources. 2. Explain basic technical terms and concepts of various green energy and building systems. 3. Assess and compare the value and cost of traditional and alternative green energy and building systems. 4. Evaluate options addressing global warming, and the need for a national and international energy policy. 5. Interpret scientific data found in a research project involving a particular topic in green science and technology.
Major Topics:	**I. GREEN SCIENCE AND TECHNOLOGY (3 hours, lecture)** A. Overview of our environment and biosphere B. Brief overview of energy and natural resource usage and policies in both California and the United States **II. NATURAL SCIENCES (6 hours, lecture)** A. Conservation principles B. Energy usage in waste management C. Energy extracted from: landfills, superfund sites, brownfields hazard waste, greenhouse gas, types of recycling forest waste **III. GREEN ELECTRONICS SYSTEMS (6 hours, lecture)** A. Basic electrical circuits

	B. Connecting to the power grid C. Battery technologies D. Fuel cell technologies **IV. GREEN ENVIRONMENTAL SYSTEMS (12 hours, lecture)** A. Introduction to solar thermal B. Solar heated and chilled water systems C. Solar air conditioning, heat pumps, exchangers D. Environmental control systems E. Energy conversions such as British Thermal Units (BTU's) **V. GREEN CONSTRUCTION SYSTEMS (6 hours, lecture)** A. Traditional construction versus green construction B. Engineered lumber C. New light roof coverings made from recycled materials D. New green exterior and interior wall treatments **VI. OVERVIEW OF RATING SYSTEMS (6 hours, lecture)** A. LEED - Leadership in Energy and Environmental Design B. Sites - Site Development Program advocated by the American Society of Landscape Architects C. Living Building Challenge - A holistic program advocated by the Cascadia Building Council **VII. GREEN ARCHITECTURAL DESIGN (9 hours, lecture)** A. Ecological construction site selections B. Passive heating systems C. Passive lighting systems D. Window systems E. Ecological floor plans F. Ecological community master plans G. Landscape systems **VIII. GREEN TRANSPORTATION (6 hours, lecture)** A. Gas and gasoline hybrids B. Fully electric vehicles C. Bio fuels used for cars, trains, and planes D. Mass transit - metro transportation and regional planning
Total Lecture Hours:	54
Total Laboratory Hours:	0
Total Hours:	54

Primary Method of Evaluation:	1) Substantial writing assignments
Typical Assignment Using Primary Method of Evaluation:	Prepare a three- to five-page report (with charts and photos) comparing and contrasting varying energy sources and their efficiencies. Submit report to the instructor.
Critical Thinking Assignment 1:	Prepare a three- to five-page report (with charts and photos) examining U.S. and international strategies for BTU energy recovery. Compare and contrast the benefits of recovered energy versus energy released by conventional BTU sources such as natural gas and coal. Create a chart comparing Biogas and natural gas use in various industries. Submit report to the instructor.
Critical Thinking Assignment 2:	Select an industry and review its waste management system. Research recycling or re-use of waste into other industries as a raw material source for the industrial process and prepare a three- to five-page report (with charts and photos). Submit report to the instructor.
Other Evaluation Methods:	Performance Exams Other Exams Quizzes Reading Reports Written Homework Class Performance Term Or Other Papers Multiple Choice Completion Matching Items True/False
Instructional Methods:	Demonstration Discussion Field Trips Group Activities Guest Speakers Lecture Multimedia Presentations
If other:	
Work Outside of Class:	Study Answer questions Required reading Written work Journal
If Other:	
Up-To-Date Representative Texts:	Bridgette Meinhold, Urgent Architecture: 40 Sustainable Housing Solutions for a Changing World, W. W. Norton and Company; 2013; 1st edition. (Discipline Standard) G. Boyle, Renewable Energy: Power for Sustainable Future, 3rd edition, Oxford University Press, 2012. (Discipline Standard) Traci Rose Rider, Understanding Green Building Guidelines for Students and Young

	Professionals. W.W. Norton and Company**,** 2010. (Discipline Standard)
Alternative Texts:	Johan Van Lengen, The Barefoot Architect - A Handbook for Green Building, Shelter Publications, 2008. (Discipline Standard) Greg Rise and William Devereli, Eden by Design - The 1930 Olmsted-Bartholomew Plan for the Los Angeles region, University of California Press, 2000. (Discipline Standard)
Required Supplementary Readings:	The Los Angeles Times, Electronic edition
Other Required Materials:	
Requisite:	Prerequisite
Category:	Sequential
Requisite course(s): List both prerequisites and corequisites in this box.	Sustainable Design 201
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	**Knowledge of ecology, sustainability and environmentalism.** SUST 201 - Examine and discuss the topics of ecology, sustainability, environmentalism, and developing green technologies from an interdisciplinary approach. **Understand the positions of ecology and environmentalism historically.** SUST 201 - Compare and contrast the varying positions of ecology and environmentalism from a historical perspective and formulate opinions of what would be appropriate strategies to resolve global environmental crisis.
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	
Requisite course:	
Requisite and Matching skill(s):Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	Eligibility for English 1A
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	**Ability to read reports and essays and skills necessary to write a college level term paper.** Read and apply critical thinking skills to college-level expository prose for the purposes of writing and discussion. Apply appropriate strategies in the writing process including prewriting, composing, revising, and editing techniques.

Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Steve Cocca
Date:	09/01/2009
Original Board Approval Date:	02/16/2010
Last Reviewed and/or Revised by:	MARC YEBER
Date:	11/16/2023
Last Board Approval Date:	03/21/2024
Effective Term:	FALL 2024