



ARIZONA STATE UNIVERSITY

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GENERAL STUDIES PROGRAM COURSE PROPOSAL COVER FORM

Courses submitted to the GSC between 2/1 and 4/30 if approved, will be effective the following Spring.

Courses submitted between 5/1 and 1/31 if approved, will be effective the following Fall.

(SUBMISSION VIA ADOBE.PDF FILES IS PREFERRED)

DATE 2/11/10

1. ACADEMIC UNIT: School of Architecture + Landscape Architecture

2. COURSE PROPOSED: ALA 240 Sustainable Design in the Built Environment 3

(prefix) (number) (title) (semester hours)

3. CONTACT PERSON: Name: Dan Hoffman Phone: 480-965-8757

Mail Code: 1605 E-Mail: Daniel.hoffman@asu.edu

4. ELIGIBILITY: New courses must be approved by the Tempe Campus Curriculum Subcommittee and must have a regular course number. For the rules governing approval of omnibus courses, contact the General Studies Program Office at 965-0739.

5. AREA(S) PROPOSED COURSE WILL SERVE. A single course may be proposed for more than one core or awareness area. A course may satisfy a core area requirement and more than one awareness area requirements concurrently, but may not satisfy requirements in two core areas simultaneously, even if approved for those areas. With departmental consent, an approved General Studies course may be counted toward both the General Studies requirement and the major program of study. (Please submit one designation per proposal)

Core Areas

Awareness Areas

Literacy and Critical Inquiry-L []

Global Awareness-G [X] - New

Mathematical Studies-MA [] CS []

Historical Awareness-H []

Humanities, Fine Arts and Design-HU []

Cultural Diversity in the United States-C []

Social and Behavioral Sciences-SB []

Natural Sciences-SQ [] SG []

6. DOCUMENTATION REQUIRED.

- (1) Course Description
(2) Course Syllabus
(3) Criteria Checklist for the area
(4) Table of Contents from the textbook used, if available

7. In the space provided below (or on a separate sheet), please also provide a description of how the course meets the specific criteria in the area for which the course is being proposed.

The course draws extensively from the study of indigenous and contemporary architecture and landscapes to demonstrate the physical principles of sustainability. Lectures will address how the design of buildings and landscapes can have both positive and negative effects on global ecology. Specific reference will be made to energy use of design strategies and their real cost measured in energy, embodied energy and the release of greenhouse gases. Cultural issues such as the relationship between individual dwellings and urban design will also be assessed from environmental and social perspectives. Case study examples will be drawn from a wide range of cultures and climatic regions with particular emphasis on desert environments.

CROSS-LISTED COURSES: [X] No [] Yes; Please identify courses:



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Is this multisection course?: No Yes; Is it governed by a common syllabus? _____

Darren Petrucci
Chair/Director (Print or Type)

Chair/Director (Signature)

Date: _____

Arizona State University Criteria Checklist for

GLOBAL AWARENESS [G]

Rationale and Objectives

Human organizations and relationships have evolved from being family and village centered to modern global interdependence. The greatest challenge in the nuclear age is developing and maintaining a global perspective which fosters international cooperation. While the modern world is comprised of politically independent states, people must transcend nationalism and recognize the significant interdependence among peoples of the world. The exposure of students to different cultural systems provides the background of thought necessary to developing a global perspective.

Cultural learning is present in many disciplines. Exposure to perspectives on art, business, engineering, music, and the natural and social sciences that lead to an understanding of the contemporary world supports the view that intercultural interaction has become a daily necessity. The complexity of American society forces people to balance regional and national goals with global concerns. Many of the most serious problems are world issues and require solutions which exhibit mutuality and reciprocity. No longer are hunger, ecology, health care delivery, language planning, information exchanges, economic and social developments, law, technology transfer, philosophy, and the arts solely national concerns; they affect all the people of the world. Survival may be dependent on the ability to generate global solutions to some of the most pressing problems.

The word university, from universitas, implies that knowledge comes from many sources and is not restricted to local, regional, or national perspectives. The Global Awareness Area recognizes the need for an understanding of the values, elements, and social processes of cultures other than the culture of the United States. Learning which recognizes the nature of others cultures and the relationship of America's cultural system to generic human goals and welfare will help create the multicultural and global perspective necessary for effective interaction in the human community.

Courses which meet the requirement in global awareness are of one or more of the following types: (1) in-depth area studies which are concerned with an examination of culture-specific elements of a region of the world, country, or culture group, (2) the study of contemporary non-English language courses that have a significant cultural component, (3) comparative cultural studies with an emphasis on non-U.S. areas, and (4) in-depth studies of non-U.S. centered cultural interrelationships of global scope such as the global interdependence produced by problems of world ecology, multinational corporations, migration, and the threat of nuclear war.

Proposer: Please complete the following section and attach appropriate documentation.

ASU--[G] CRITERIA			
GLOBAL AWARENESS [G]			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Studies must be composed of subject matter that addresses or leads to an understanding of the contemporary world outside the U.S.	See attached syllabus: Course Objectives - p. 1; Lectures - p. 2-3
		2. Course must be one or more of following types (check all which may apply):	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	a. In-depth area studies which are concerned with an examination of culture-specific elements of a region, country or culture group. The area or culture studied must be non-U.S. and the study must contribute to an understanding of the contemporary world.	See attached syllabus: Course Objectives - p. 1; Lectures - p. 2-3 - specifically 1d, e, f, g, h, i; 2c, d, e, f, h; 3c, d, e, f, g, h.
<input type="checkbox"/>	<input type="checkbox"/>	b. Contemporary non-English language courses that have a significant cultural component.	
<input type="checkbox"/>	<input type="checkbox"/>	c. Comparative cultural studies in which most, i.e., more than half, of the material is devoted to non-U.S. areas.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	d. In-depth studies of non-U.S. centered cultural interrelationships of global scope, such as the global interdependence produced by problems of world ecology, multinational corporations, migration, and the threat of nuclear war. Most, i.e., more than half, of the material must be devoted to non-U.S.	See attached syllabus: Course Objectives - p. 1; Lectures - p. 2-3 - specifically 1d, e, f, g, h, i; 2c, d, e, f, h; 3c, d, e, f, g, h.

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Course Prefix	Number	Title	Designation
ALA	240	Sustainable Design in the Built Environment	G

Explain in detail which student activities correspond to the specific designation criteria. Please use the following organizer to explain how the criteria are being met.

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
1. Studies must be composed of subject matter that leads to an understanding of the contemporary world outside the U.S.	The course draws extensively from the study of indigenous architecture and landscapes to demonstrate the physical principles of sustainability.	The course is divided into three sections: Climate and Culture, Sustainable Structures and Building Materials, and Sustainable Landscapes. See specific lecture titles (specifically 1d, e, f, g, h, i; 2c, d, e, f, h; and 3c, d, e, f, g, h) and descriptions in the attached CV.
2.a, In-depth area studies which are concerned with an examination of culture specific elements of a region, country or group. The area or culture studied must be non U.S. and the study must contribute to the understanding of the contemporary world.	As noted above, the course draws extensively from the study of indigenous architecture and culture. For example, in discussing the concept of low energy cooling in urban environments reference will be made to passive cooling techniques used in traditional Iraqi and Iranian cities. These techniques will be compared to cooling techniques used in contemporary western cities such as Phoenix.	See the lectures noted in the attached CV. Note that a majority of the lectures draw extensively from climatic regions outside of the US (specifically 1d, e, f, g, h, i; 2c, d, e, f, h; and 3c, d, e, f, g, h).
2.d, In-depth studies of non-US centered cultural interrelationships of global scope such as the global interdependence produced by world ecology, multinational corporations, migrations and the	Lectures will address how the design of buildings and landscapes can have both positive and negative effects on global ecology. Specific reference will be made to energy use of specific design	See the lectures noted in the attached CV. Note that the last lecture in each of the three units deals with design options for a sustainable future.

<p>threat of nuclear war. More than half of the material must be devoted to non- U.S.</p>	<p>approaches and their real cost measured in energy, embodied energy and the release of greenhouse gases. Case study examples such as the planned Masdar district in Abu Dhabi will be offered as an example of how design can help us create a sustainable future.</p>	
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Course Title: Sustainable Design in the Built Environment.

A review of the physical principles used in the design of sustainable buildings, landscapes and urban environments.

Course Description

The purpose of the course is to provide an introduction to principles used by designers in the design of sustainable buildings, landscapes and environments. Topic areas include basic concepts energy transfer, thermal comfort, structural efficiency, the sustainable materials and landscape ecology. Case studies and historical examples from various cultures and regions of built projects are used to illustrate these concepts and provide an overview of current practices of sustainable design in architecture, landscape architecture and urban design.

Course Objectives

1. Provide an introduction to sustainable design as it applies to the aesthetic and historical understanding built environment typical of climatic / cultural regions.
2. Provide an understanding of energy flows on a macro and micro level as it applies to sustainable design of the built environment.
3. Provide an understanding of design principles in indigenous, low energy contexts
4. Provide an introduction to the principles of thermodynamics and energy transfer as applied to the concept of thermal comfort, the localized effect of energy transfer in a building.
5. Provide an introduction to the principle of structural efficiency and material properties applied to the design of culturally specific structures.
6. Provide an introduction to the physical dynamics of landforms (the interaction of land, sun wind and water) and the impact upon the design of sustainable buildings and sites.
7. Provide an introduction to the concept of biologic diversity and its application in the design of sites.
8. Provide an introduction to the concept of sustainability as it applies to the design of urban areas, noting the interaction between natural and cultural systems.

Course Requirements

The course takes the form of lectures and a series of hands-on investigations related to the physical principles discussed in the syllabus. A typical investigation will ask the student to document, draw or write about a physical phenomena related to a topic being discussed in the lecture in a "workbook." Three quizzes are given over the term along with a final exam.

Grading

The grade for the course is determined as follows: 50% workbook assignments, 50% quizzes and final exam.

Lectures:

Unit 1: Climate and Culture

1.a, Course Overview – The Concept of Sustainability

Definitions of sustainability and the nature of the built environment, reconciling technical and cultural ways of knowing

1.b, Principles of Thermal Transfer

How energy moves from higher to lower forms through convection, radiation and conduction

1.c, Principles of Thermal Comfort

How people stay comfortable in various climates

1.d, Climatic Regions

An introduction to the concept of global energy transfer and climatic regions

1.e, Cultural Flows

How global energy flows have influenced history, culture and dwelling

1.f, Climate and Culture I

The relationship between climate and culture as seen through the design of indigenous structures; arctic and temperate regions

1.g, Climate and Culture II

The relationship between climate and culture in pre-modern cultures as seen through the design of indigenous structure; desert and equatorial regions

1.h, Energy and Contemporary Buildings I

An understanding of contemporary buildings through the lens of energy use, the technical and cultural effects of cheap energy on the built environment

1.i, Energy and Contemporary Buildings II

The concept of a net-zero building; operational and embodied energy, visionary architecture of a sustainable future

Unit 2: Sustainable Structures and Buildings Materials

2.a, Why Buildings Stand Up

Basic principles of statics; stability and load transfer, tension, compression and shear

2.b, Why buildings Fall Down

The causes of structural failure, excessive and eccentric loads, buckling, stress and strain

2.c, Compressive Structures

Historical examples of massive, masonry structures

2.d, Tensile Structures

Historical examples of light weight, tensile based structures

2.e, Composite Structures I

Historical examples of wood structures

2.f, Composite Structures II

Historical and contemporary examples of steel and concrete structures

2.g, Materials and Embodied Energy

The concept of embodied energy, reuse and recycling of materials

2.h, Contemporary, Efficient Structures

Contemporary examples of structurally efficient buildings

Unit 3: Sustainable Landscapes

3.a, Geologic process and landform

An overview of basic geologic processes and their resulting landforms

3.b, Hydrology

Water and its effects on the landscapes and building sites

3.c, Micro-Climatic Effects I

Case studies demonstrating the effect of orientation, altitude, soil, planting and water on building sites- temperate regions

3.d, Micro-Climatic Effects II

Case studies demonstrating the effect of orientation, altitude, soil, planting and water on building sites- desert regions

3.e, Micro-Climatic Effects III

Case studies demonstrating the effect of orientation, altitude, soil, planting and water on building sites- tropical regions

3.f, Urban Landscapes I

Sustainable design of cities in temperate regions

3.g, Urban Landscapes II

Sustainable design of cities in desert regions

3.h, Urban Landscapes III

Visionary landscapes, sustainable futures