



**SENATE COMMITTEE ON CURRICULAR AFFAIRS**  
**COURSE SUBMISSION AND CONSULTATION FORM**

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*Principal Faculty Member(s) Proposing Course*

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| Name                | User ID | College           | Department    |
|---------------------|---------|-------------------|---------------|
| DOUGLAS BIRD        | dwb5537 | Liberal Arts (LA) | Not Available |
| DOUGLAS WARREN BIRD | dwb5537 | Liberal Arts (LA) | Not Available |

Academic Home: Liberal Arts (LA)

Type of Proposal:  Add  Change  Drop

**Course Designation**

(ANTH 240N) Livelihoods and Ecosystems: Anthropological Approaches to Human-Environment Interaction

**Course Information**

Cross-Listed Courses:

Prerequisites:

Corequisites:

Concurrents:

Recommended Preparations:

Abbreviated Title: Livelihoods & Eco  
Discipline: General Education  
Course Listing: Inter-Domain

**Special categories for Undergraduate (001-499) courses**

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**Foundations**

- Writing/Speaking (GWS)
- Quantification (GQ)

**Knowledge Domains**

- Health & Wellness (GHW)
- Natural Sciences (GN)
- Arts (GA)
- Humanities (GH)
- Social and Behavioral Sciences (GS)

**Additional Designations**

- Bachelor of Arts
- International Cultures (IL)
- United States Cultures (US)
- Honors Course
- Common course number - x94, x95, x96, x97, x99
- Writing Across the Curriculum

**First-Year Engagement Program**

- First-Year Seminar

**Miscellaneous**

Common Course

#### GE Learning Objectives

GenEd Learning Objective: Effective Communication

GenEd Learning Objective: Creative Thinking

GenEd Learning Objective: Crit & Analytical Think

GenEd Learning Objective: Global Learning

GenEd Learning Objective: Integrative Thinking

GenEd Learning Objective: Key Literacies

GenEd Learning Objective: Soc Resp & Ethic Reason

#### Bulletin Listing

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|--|--------------------------|
| Minimum Credits:                           | 3                        |
| Maximum Credits:                           | 3                        |
| Repeatable:                                | NO                       |
| Department with Curricular Responsibility: | Anthropology (UPLA_ANTH) |
| Effective Semester:                        | Upon Approval            |
| Travel Component:                          | NO                       |

#### Course Outline

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##### A brief outline or overview of the course content:

This course examines concepts and evidence used to understand the relationship between environmental change and human livelihoods. Livelihoods include all the strategies that humans use in making a living. In this class, we explore different ways to approach questions about social, cultural and ecological factors that shape past and present variability in human subsistence practices, and how our practices shape (and are shaped by) our environmental contexts. The course integrates those conceptual approaches into an examination of archaeological and paleo-ecological evidence about the role that humans have played in the function (or dysfunction) ecosystems worldwide. Students trace the roots of our contemporary environmental dilemmas – in which human activities have a significant global impact on all the Earth's ecosystems – through to the origins of our genus sometime around two million years. We review current archaeological and paleo-ecological evidence of variability in human subsistence practices over the last two million years, the spread of modern humans throughout the planet over the last fifty millennia, the origins of intensified food production over the last twenty thousand years, and the emergence of globally integrated economic systems over the last few centuries. Case studies of the role of contemporary Indigenous livelihoods in ecosystems and resource management are discussed. We then use these empirical studies to situate contemporary social issues involved in global environmental change.

##### A listing of the major topics to be covered with an approximate length of time allotted for their discussion:

Week 1 Course introduction. Human agency and the state of earth's systems, re-thinking the human place in nature, the many roads to conservation.

Week 2 Why do our resource use patterns vary? Ecological and social theories of consumption, (ir)rationality, and subsistence preferences. Tinbergen's '4 Whys': proximate, developmental, functional, and historical explanations. Key concepts of trade-offs and fitness.

Week 3 Conservation and the natural science behind it all: evolutionary ecology, ecological disturbance and disequilibrium, niche construction, trophic interactions. Key concepts of emergence and self-organization.

Week 4 The web of life: are we in it? Humans in trophic interactions and food webs, net primary production, ecosystem productivity, land use, and long term disturbance. Key concepts of resilience, sustainability, and vulnerability.

Week 5 Human institutions, conflicts of interests, and complex socio-ecological systems. The tragedy of the commons, collective action problems, conspicuous consumption, and property regimes. Key concepts of governance and organization of labor.

Week 6 Introduction to the evolution of human-environment interactions: fire, cooking and the origins of human social behavior.

Week 7 Interactions between archaic humans and their environments: the "Old Worlds", Eurasia and Africa 1.5 million years ago to 150 thousand years ago.

Week 8 The origins of modern humans. Changing resource use and changing environments in the late Pleistocene, ~150 thousand years ago to 50 thousand years ago.

Week 9 The Great Migration: the spread and ecological implications of modern humans in Australia, from 50 thousand years ago through to the Last Glacial Maximum ~20 thousand years ago.

Week 10 Settling the Americas: new keystone species and novel ecosystems as humans colonize the continents ~15 thousand years ago.

Week 11 The Austronesian Expansion: ecological change as we voyage through the Pacific Basin and Indian Oceans over the last ~4500 years.

Week 12 Intensification: how hunting and gathering in traditional societies impacts ecosystems. The role of human fire, debates over Indigenous hunters and conservation. Ethnographic case study: Australian Aboriginal fire management.

Week 13 The Bigger Picture: political ecology, ecosystem services, and the social dimensions of human-environment interactions. Ethnographic case study: African pastoral systems as complex socio-ecological systems.

Week 14 Globalization, local communities, and Indigenous livelihoods: inequality, "entangled" practices, conservation, development, and policy.

Week 15 From how to think to how to act: problems with "protectionism". Dynamics of power, gender, inequality, security, and socio-political dilemmas of sustainability and environmental justice.

#### **Course Description:**

This course provides an anthropological understanding of the relationship between human subsistence and environment. The impacts of environmental change on human societies, and the roles those societies play in ecological modification, have deep roots in human evolution. This class focuses on providing students with tools to understand the foundations and cross-cultural expressions of resource use, environmental transformation, and their ecological interactions.

The class has three goals: 1) introduce students to ways of thinking about ecological and social factors that shape variability in how humans define, use, and consume resources, 2) provide students the opportunity to explore archaeological, ethnographic, and ecological evidence of the interaction between human livelihoods and habitats across the entirety of the human experience, 3) utilize those concepts and evidence to investigate variability in contemporary livelihoods, socio-ecological systems, and the dilemmas we all face in natural resource use and sustainability.

Regarding the first goal, students are introduced to the natural science of conservation biology and community ecology, along with influential concepts in the social science of decision-making and cultural institutions of resource management. We review key models of ecosystem dynamics and social interaction from evolutionary ecology, disturbance ecology, niche construction, common property theory, and political ecology to approach questions about consumption, complex socio-ecological systems, and the role of humans in food webs and trophic interactions.

The course then investigates archaeological and paleo-ecological evidence concerning the evolution of human subsistence systems, global settlement, intensification, and their implications for understanding environmental change over the last two million years. We take the broadest possible anthropological approach: we explore the diversity of ways that humans have made a living in the past, and investigate a wide variety of contemporary systems of resource use. We begin with the emergence of subsistence regimes among the earliest members of our genus and variability in environmental conditions through the Pleistocene. We then discuss the spread of modern humans and arguments concerning the ecological impact of people in the "New Worlds" as humans first colonized Australia, the Americas, and islands of Pacific and Indian Oceans.

Finally, students investigate contemporary Indigenous systems of resource use and food production, exploring interactions between people and culturally constructed environments, commensal relationships between humans and non-human plants and animals, processes of intensification, and ecosystem function. The course incorporates these concepts with studies of inequality into new ways of understanding global issues of conservation, economics, and policy impinging on environmental change.

#### **The name(s) of the faculty member(s) responsible for the development of the course:**

Name: DOUGLAS BIRD (dwb5537)

Title: ASSOC PROFESSOR OF ANTH

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Address: 0323B CARPENTER BLDG

Campus:

City:

Fax:

## **Course Justification**

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#### **Instructional, Educational, and Course Objectives:**

**This section should define what the student is expected to learn and what skills the student will develop.**

Students will gain critical integrative thinking skills by learning how to link knowledge and evidence from the social and natural sciences to explain variability in interactions between humans and their environments. They will gain the ability to use scientific methodologies and social theoretical approaches to understand similarities and differences in cross-cultural expressions of human use and definition of their environments. They gain fundamental introduction to the natural sciences of evolutionary ecology and community ecology and the role of humans in complex socio-ecological systems. We take the broadest approach, and explore the diversity of human environmental actions across the breadth of the human experience, beginning with the origins of our genus in the early Pleistocene. Students then integrate the concepts and empirical evidence from the class into an understanding of diversity in livelihood practices and the social dilemmas we face today in environmental management and sustainability.

#### **Evaluation Methods:**

**Include a statement that explains how the achievement of the educational objective identified above will be assessed.**

**The procedures for determining students' grades should be specifically identified.**

2 midterm exams (each worth 20% of the final grade) totaling 40% of total final grade: There are 2 in-class exams. The exams will be mainly short answer format, focused on readings and lecture.

Final exam totaling 30% of the final grade: The final exam will be cumulative, short answer and short essay format, and will cover both lectures and readings.

Research question exercises (each exercise worth 5% of the final grade) totaling 30% of final grade: Students are required to develop research questions and hypotheses about human-environmental interactions based on lectures and readings. Each exercise consists of a 1-page, single spaced essay that develops a research question and a potential answer to that question. Each student will submit 1 exercise every other week, beginning the third week of the semester. There are a total of 6 exercises.

**Relationship/Linkage of Course to Other Courses:**

**This statement should relate the course to existing or proposed new courses. It should provide a rationale for the level of instruction, for any prerequisites that may be specified, or for the course's role as a prerequisite for other courses.**

Along with the proposed ANTH 275, the class is one of two new GE courses within Anthropology serving as the foundations for a new emphasis in human ecology.

**Relationship of Course to Major, Option, Minor, or General Education:**

**This statement should explain how the course will contribute to the major, option, or minor and indicate how it may function as a service course for other departments.**

The course will serve as part of a BA or BS in Anthropology and will be offered as a General Education Integrated Studies, serving as an inter-domain class.

**A description of any special facilities:**

None.

**Frequency of Offering and Enrollment:**

The course will be offered every year, with enrollment of around 50 students.

**Alignment with General Education Objectives**

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**EFFECTIVE COMMUNICATION** – the ability to exchange information and ideas in oral, written, and visual form in ways that allow for informed and persuasive discourse that builds trust and respect among those engaged in that exchange, and helps create environments where creative ideas and problem-solving flourish.

**KEY LITERACIES** – the ability to identify, interpret, create, communicate and compute using materials in a variety of media and contexts. Literacy acquired in multiple areas, such as textual, quantitative, information/technology, health, intercultural, historical, aesthetic, linguistic (world languages), and scientific, enables individuals to achieve their goals, to develop their knowledge and potential, to lead healthy and productive lives, and to participate fully in their community and wider society.

**CRITICAL AND ANALYTICAL THINKING** – the habit of mind characterized by comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating a conclusion. It is the intellectually disciplined process of conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action.

**INTEGRATIVE THINKING** – the ability to synthesize knowledge across multiple domains, modes of inquiry, historical periods, and perspectives, as well as the ability to identify linkages between existing knowledge and new information. Individuals who engage in integrative thinking are able to transfer knowledge within and beyond their current contexts.

**CREATIVE THINKING** – the capacity to synthesize existing ideas, images, or expertise in original ways and the experience of performing, making, thinking, or acting in an imaginative way that may be characterized by innovation, divergent thinking, and intellectual risk taking.

**GLOBAL LEARNING** – the intellectually disciplined abilities to analyze similarities and differences among cultures; evaluate natural, physical, social, cultural, historical, and economic legacies and hierarchies; and engage as community members and leaders who will continue to deal with the intricacies of an ever-changing world. Individuals should acquire the ability to analyze power; identify and critique interdependent global, regional, and local cultures and systems; and evaluate the implications for people's lives.

**SOCIAL RESPONSIBILITY AND ETHICAL REASONING** – the ability to assess one's own values within the social context of problems, recognize ethical issues in a variety of settings, describe how different perspectives might be applied to ethical dilemmas, and consider the ramifications of alternative actions. Individuals should acquire the self-knowledge and leadership skills needed to play a role in creating and maintaining healthy, civil, safe, and thriving communities.

**What component(s) of the course will help students achieve the General Education Learning Objectives covered in the course? Provide evidence that students in the course have adequate opportunities to achieve the identified learning objectives.**

Integrative thinking: Students will gain critical integrative thinking skills by learning how to integrate knowledge and evidence from the social and natural sciences to understand variability in interactions between human subsistence strategies and their environments. We draw specifically from social theoretical frameworks to explore the political contexts of human-environmental relationships and issues of environmental justice. We use common-pool resource theory (sensu Ostrom) to frame questions about consumption and resource governance, and then integrate questions about human use and management of resources/environments with theoretical approaches in the biological sciences in conservation biology, evolutionary ecology, and community ecology. We use those integrated concepts to approach interpretations of the archaeological and paleo-ecologic record of human-environmental interaction over the last 2 million years.

Global learning: The global learning component will be satisfied by requiring students to be able to use scientific and social methodologies to explain similarities and differences in livelihoods between individuals and across societies, beginning with evidence of the earliest human societies and the diverse strategies humans have used to make a living, through time and across

space. This will be reinforced through an introduction of the prehistory of human-environmental interactions and numerous contemporary case studies of Indigenous resource use practices and management, as well as through successful completion of the research question exercises students submit, and their successful completion of exams which will present students with data on cultural and environmental differences/similarities in use of natural/cultural resources. Description and analysis of variability in the role of livelihood decisions in socio-ecological systems is then used to frame an understanding of the scale of the environmental problem we face today, along with the scale of the solution.

Critical and analytical thinking: Students will engage with scientific methodologies by way of introductions to influential theoretical frameworks employed in understanding the processes that shape socio-ecological systems. These include systematic approaches for exploring both social and evolutionary processes that shape livelihood strategies, and the niche-construction (ecosystemic and cultural) implications of those strategies. Students use those concepts to frame their own and other scholars' questions and hypotheses about why human behavior in resource use varies, using different scales of analysis according to Tinbergen's classic '4 Whys': ontogenetic (social and physical development), proximate (immediate "cause"), phylogenetic (historical trajectory), and functional (value). Students then engage with the empirical archaeological/paleo-ecological and ethnographic records to explore those hypotheses. We use the record of prehistoric and ethnographic variability in human livelihoods and environments not simply as a source of description, but as a source of data against which students test their ideas about why human-environmental interaction changes. A deep temporal understanding of human dimensions of natural resource use frames the final part of the course to explore contemporary socio-political dilemmas we face in globalizing process of environmental change.

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**How will students be assessed to determine their attainment of the Learning Objective(s) of General Education covered in this course? This assessment must be included as a portion of the student's overall performance in this course.**

Throughout the semester, students will work on writing and presenting a series of research questions and hypotheses concerned with explaining variability in human-environmental interaction, for a total of 6 exercises (worth a total of 30% of the final grade). Each exercise will consist of a 1 page, single spaced essay. Essays will be evaluated based on student performance in clearly articulating questions that are potentially answerable, their ability to specify hypotheses to address those questions, and the kinds of evidence that might be marshaled to evaluate their hypotheses.

Exercise 1: Using ideas from disequilibrium ecology, students are asked to develop a question about potential roles that human subsistence practices can play as a form of disturbance that shapes environmental heterogeneity and diversity.

Exercise 2: Using models from evolutionary ecology, students are asked to develop a question about why consumption and livelihood decisions might vary according to immediate trade-offs people face using energy and time.

Exercise 3: Using evidence of Pleistocene colonization of Australia by modern humans, students are asked to develop questions about the potential role that people, environmental change, or both played in the extinction of Pleistocene mega-fauna.

Exercise 4: Using evidence of initial settlement of the Pacific Basin, students are asked to develop a question about the environmental impact of translocated animals and the emergence of novel complex socio-ecological systems in New Zealand.

Exercise 5: Using evidence showing the role of traditional burning and hunting in habitat heterogeneity, students are asked to develop a question about whether or not conservation goals and economic development are mutually exclusive in arid Australia.

Exercise 6: Using evidence concerning novel socio-ecological systems emerging from pastoralism in Africa, students are asked to develop questions about how we might measure and evaluate "ecosystem services" under open access property regimes.

In addition to the research question exercises, the midterms (40% of the grade, combined) and final exam (30% of the grade) are designed not simply as a means to evaluate student performance, but as an important tool to integrate thinking across the social and natural sciences, and a means to ensure that students begin to comprehend the diversity of human livelihoods and their environmental interactions. Prior to each exam, students are given a comprehensive study guide with a list of key terms, key players, and key concepts (and for the final exam, a list of key essay questions). Students are then required in their study for the exams to be able to not only identify the terms, players, and concepts, but to relate them to each other. Exam questions are a direct sample from the study guide, and student performance is evaluated based on the accuracy of identification and how well they were able to relate the terms within and across broad conceptual frameworks in the class.

The goal of all the exercises and exams is to engage processes of systematic inquiry, define the scale of question, and provide tools to evaluate different levels of explanation regarding how livelihoods shape and are shaped by socio-ecological contexts.

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## General Education Domain Criteria

General Education Designation: Inter-Domain

### GN Criteria

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- Explain the methods of inquiry in the natural science fields and describe how the contributions of these fields complement inquiry in other areas
- Construct evidence-based explanations of natural phenomena
- Demonstrate informed understandings of scientific claims and their applications
- Evaluate the quality of the data, methods, and inferences used to generate scientific knowledge
- Identify societal or philosophical implications of discoveries in the natural sciences, as well as their potential to address contemporary problems

### What components of the course will help students achieve the domain criteria selected above?

Upon completion of ANTH 240: Livelihoods and Ecosystems, students will have increased their abilities to: 1. understand scientific methods for addressing questions about ecosystem change, 2. evaluate evidence about the role of humans in changing ecosystems over the last 60,000 years, and 3. identify the implications of that evidence for understanding the social dilemmas inherent in environmental problems we face today.

1. Weeks 3-4 focus on the ways that we formulate questions about processes that shape ecosystem function and the methods that are used for investigating the role of humans in changing ecological relationships. The course introduces students to key approaches in evolutionary ecology and disturbance ecology, and utilizes models from those conceptual frameworks to organize the way we ask questions and seek evidence for understanding human-environmental interaction over the last 60,000 years of human expansion

across the planet.

2. Weeks 6-12 are devoted to introducing students to evidence of changing human subsistence over the last 60,000 years and the dynamic interactions between variable subsistence patterns and variable ecological contexts. Students learn how such evidence (paleoecological and archaeological) is used to evaluate explanations for why livelihoods change and how those changes are both consequence and cause of environmental, climatic, and trophic interactions.

3. Weeks 13-14 link the paleoecological and archaeological evidence of human-environment interaction to the social dilemmas we face today in resource use, land conversion, and environmental conservation. We use two specific ethnographic case studies (pastoral systems in Cameroon - week 13, and indigenous land use in Australia - week 14) and ask students to reflect on the implications of a deep history of changing subsistence patterns for our notions about "nature" and resource/land "management". Pastoral systems in Africa and burning regimes among Aboriginal Australians have often been cast as the source for environmental degradation, despite evidence of trophic collapse when traditional practices have been curtailed. Archaeological evidence suggests both systems have deep histories of sustainability. The goal of these case studies is for students to reflect on how our assumptions about the impact of humans on the "natural" environment are often biased by our own preconceptions, which are in turn shaped by our own distinctive livelihood histories. This then provides a foundation for the final weeks, where students will approach questions about the emergence of complex adaptive systems (some of which fundamentally involve human action), and how collective action for conservation can be undermined by conflicts of interest between different livelihood systems and the trade-offs individuals face in making a living.

Through lectures, readings, and practical exercises, students will understand how temporal and spatial diversity in socio-ecological systems is affected by different types of livelihoods and subsistence decisions. Through practical exercises, students will learn how to approach scientific questions about human behavior by integrating hypotheses from both the natural and social sciences, with a goal toward understanding conceptually how social and ecological contexts influence subsistence practices; understanding the evolutionary, environmental and social processes that shape socio-ecological systems; and understanding the implications those systems for contemporary environmental issues. Students will engage with scientific methodologies through a hypothesis-driven series of exercises in which they develop "why" question about variation livelihoods and environments. Students will formulate a question, derive hypotheses, and specify the types of evidence required to evaluate potential predictions from those hypotheses. Through lectures and readings, students will be able to identify how livelihoods are tied to cultural and evolutionary histories of ecological interaction, illustrated by changes in human subsistence and settlement through Pleistocene and into the Holocene, along with detailed case studies of contemporary land use in pastoralist and hunting societies.

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## GS Criteria

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- Explain the various methods of inquiry used in the social and behavioral sciences and describe how the contributions of these fields complement inquiry in other areas
- Identify and explain major foundational theories and bodies of work in a particular area of social and behavioral sciences
- Describe the ways in which many different factors may interact to influence behaviors and/or institutions in historical or contemporary settings
- Explain how social and behavioral science researchers use concepts, theoretical models and data to better understand and address world problems
- Recognize social, cultural, political and/or ethical implications of work in the social and behavioral sciences

### What components of the course will help students achieve the domain criteria selected above?

Through lecture, readings, and coursework, students will be able to explain how archaeological and ethnographic methods can be used to more fully explore the ways in which different societies define, value – and through their livelihoods – interact with the environment. Students will explore the interrelationships of the many factors that shape our livelihoods, and understand how histories and socio-ecological contexts interact to affect variation in decisions about subsistence practices and the dynamic processes shaping the relationship between those practices and larger scale complex systems.

Major foundational theories: Through lecture and readings, students will be able to identify and explain major foundational theories in social/behavioral sciences as they have been used to explain diversity in subsistence choices, livelihoods, and political contexts shaping interactions between people and environments. The broad framework of the class is that of contemporary socio-ecological theory, relating to the study of local scales of decision-making in resource use and environmental disturbance with larger scales of system emergence, resilience and vulnerability. The approach draws on a range of cross-disciplinary concepts, including microeconomic theory, evolutionary and behavioral ecology, complex adaptive systems, and institutional resource governance. Students will receive an introduction to "economic" trade-offs and simple optimality models of resource use via the prey choice model in behavioral ecology, and learn how it can be applied (and misapplied) toward an understanding of subsistence choices more generally. Students are then exposed to more dynamic models derived from theories of social interaction involving conflicts of interest over resource use, including a review of the tragedy of the commons, collective action problems, theories of self-organization, social critiques of conspicuous consumption, and approaches to cultural institutions of resource governance and property regimes. Students will learn how to relate those local dynamics to ecological disturbance and theories of system-level scales of emergent niche-construction, sustainability and vulnerability. The course also includes sections on power and gender as they relate to understanding the political dimensions of environmental change, incorporating Marxist notions of inequality and its effect on political power, the governance of ecosystems, and the ways by which services supplied by ecosystems are valued. This includes an introduction to the environmental implications of market-based solutions to escalating inequality, and their implications for changing practices of consumption in the "developed" and "developing" world.

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## Integrative Studies

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### Explain how the intellectual frameworks And methodologies of the two Knowledge Domains will be explicitly addressed in the course and practiced by the students.

Integrative thinking is reinforced by the way that students will explore explanations of livelihoods and socio-ecological systems using archaeological records, ethnographic evidence, and Tinbergen's Levels of Explanation as a framework to ask questions about temporal and spatial diversity of subsistence practices. Tinbergen's explanatory framework is a fundamental organizing principle of

the course. It classifies ways to ask questions of why behaviors take the form they do into four major categories: proximate cause, contextualized (ontogenetic, cultural) individual development, functional value, and phylogenetic history. In coursework and exams, students will be required to demonstrate an understanding of how hypotheses at different levels are not necessarily mutually exclusive and how these different levels of explanation interact to produce variability in livelihoods. Students then demonstrate how those interactions shape emergent socio-ecological phenomena.

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**Demonstrate that each Of the two domains will receive approximately equal attention, providing evidence from course topics, assignments, or other course components, and that students will integrate material from both domains.**

Most weeks are integrative in scope, that is, include a focus on both evolutionary explanations as well as social explanations and cultural contexts of diversity in livelihoods and socio-ecological systems. Weeks 1 and 2 integrate humans as ecological agents, framing questions about the utility of approaches that have traditionally set humans apart from natural systems. Weeks 3 through 5 focus on integrating approaches from the social and natural sciences into explanations of emergent ecological processes involving human livelihoods. Weeks 6-11 focus on integrating evidence from paleo-ecological approaches of environmental change with archaeological analyses of spreading human populations and changing livelihood practices throughout the Pleistocene and Holocene. Weeks 12 and 13 use in depth ethnographic case studies to integrate social and biological processes that shape contemporary Indigenous systems of land use in Australia and Africa. Weeks 14 and 15 then apply what we learn from the ethnographic cases toward and integrated understanding of the politics of environmental change in globalizing developed and developing worlds. Given that all weeks include both social and biological focus, there is an equal representation of the two domains.

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**Briefly explain the staffing plan. Given that each Inter-Domain course is approved for two Knowledge Domains, it will be taught by an instructor (or instructional team) with appropriate expertise in both domains.**

As an anthropologist trained in both social and biological approaches to the scientific explanation of human variability and behavior, and with many years of archaeological and ethnographic experience, I am qualified in both domains.

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**Describe the assessments that will be used to determine students' ability to apply integrative thinking.**

There are two major assessments: 1) The exams will be focused on asking students to identify and relate key concepts that integrate theory and evidence from across social and natural sciences concerning variability in livelihoods. The essays in the final exam will require that students demonstrate working knowledge of different levels of explanation in the behavioral sciences, and how those explanations can inform approaches in the environmental sciences. 2) The semester-long research question exercises will require students to integrate different forms of inquiry and evidence from the social and environmental sciences to explore socio-ecological phenomena. Given that the prompts are inherently about the interaction between social behavior and the environment, students must demonstrate creativity in linking epistemologies and knowledge across disciplines.

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**Campuses That Have Offered ( ) Over The Past 4 Years**

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|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| semester | AB | AL | BK | BR | BW | CR | DS | ER | FE | GA | GV | HB | HN | HY | LV | MA | NK | PC | SH | SL | UP | WB | WC | WS | XC | XP | XS | YK |
|----------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|

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## **ANTHROPOLOGY 240**

### **Livelihoods and Ecosystems:**

Anthropological Approaches to Human-Environment Interaction

Professor: Douglas Bird

Department of Anthropology

Office: 323-B Carpenter Bldg

Office Hour: Mondays 12:30-1:30 pm; or by appointment

Email: [dwb5537@psu.edu](mailto:dwb5537@psu.edu)

Class location and time:

### **COURSE DESCRIPTION**

This course examines concepts and evidence used to understand the relationship between environmental change and human livelihoods. Livelihoods include all the strategies that humans use in making a living. In this class, we explore different ways to approach questions about social, cultural and ecological factors that shape past and present variability in human subsistence practices, and how our practices shape (and are shaped by) our environmental contexts. The course integrates those conceptual approaches into an examination of archaeological and paleo-ecological evidence about the role that humans have played in the function (or dysfunction) ecosystems worldwide. Students trace the roots of our contemporary environmental dilemmas – in which human activities have a significant global impact on all the Earth's ecosystems – through to the origins of our genus sometime around two million years. We review current archaeological and paleo-ecological evidence of variability in human subsistence practices over the last two million years, the spread of modern humans throughout the planet over the last fifty millennia, the origins of intensified food production over the last twenty thousand years, and the emergence of globally integrated economic systems over the last few centuries. Case studies of the role of contemporary Indigenous livelihoods in ecosystems and resource management are discussed. We then use these empirical studies to situate contemporary social issues involved in global environmental change.

### **MATERIALS**

Texts:

Moran, E.F. (2017). *People and Nature: An Introduction to Human Ecological Relations*, 2<sup>nd</sup> Edition. West Sussex: Wiley Blackwell.

Mulder, M. B., & Coppolillo, P. (2005). *Conservation: Linking Ecology, Economics, and Culture*. Princeton: Princeton University Press.

Fagan, B., & Durrani, N. (2015). *People of the Earth: An Introduction to World Prehistory*. New York: Routledge.

Any additional readings from the primary literature will be available in pdf format.

### **ASSIGNMENTS AND GRADING**

Grades based on % attained of total points earned by the top score of the class.

94% of the highest score in the class and above = A,

90-93.9% = A-,

86-89.9% = B+,

82-85.9% = B,



80-81.9% = B-,  
76-79.9% = C+,  
72-75.9% = C,  
70-71.9% = C-,  
66-69.9% = D+,  
62-65.9% = D,  
60-61.9% = D-.

**Total number of points for the class are based on:**

**2 midterm exams, 40%** of total final grade: There are 2 in-class exams, each worth 20% of the final grade. The exams will be mainly short answer format, focused on readings and lecture.

**Final exam, 30%** of the final grade: The final exam will be cumulative, short answer and short essay format, and will cover both lectures and readings.

**Research question exercises, 30%** of final grade: Students are required to develop research questions and hypotheses about human-environmental interactions based on lectures and readings. Each exercise consists of a 1-page, single spaced essay that develops a research question and a potential answer to that question. Each student will submit 1 exercise every other week, beginning the third week of the semester. There are a total of 6 exercises, totaling 30% of the final grade.

The research questions and hypotheses that students develop are concerned with explaining variability in human-environmental interaction. Each exercise will consist of a 1 page, single spaced essay. Essays will be evaluated based on student performance in clearly articulating questions that are potentially answerable, their ability to specify hypotheses to address those questions, and the kinds of evidence that might be marshaled to evaluate their hypotheses.

Exercise 1: Using ideas from disequilibrium ecology, students are asked to develop a question about potential roles that human subsistence practices can play as a form of disturbance that shapes environmental heterogeneity and diversity.

Exercise 2: Using models from evolutionary ecology, students are asked to develop a question about why consumption and livelihood decisions might vary according to immediate trade-offs people face using energy and time.

Exercise 3: Using evidence of Pleistocene colonization of Australia by modern humans, students are asked to develop questions about the potential role that people, environmental change, or both played in the extinction of Pleistocene mega-fauna.

Exercise 4: Using evidence of initial settlement of the Pacific Basin, students are asked to develop a question about the environmental impact of translocated animals and the emergence of novel complex socio-ecological systems in New Zealand.

Exercise 5: Using evidence showing the role of traditional burning and hunting in habitat heterogeneity, students are asked to develop a question about whether or not conservation goals and economic development are mutually exclusive in arid Australia.

Exercise 6: Using evidence concerning novel socio-ecological systems emerging from pastoralism in Africa, students are asked to develop questions about how we might measure and evaluate "ecosystem services" under open access property regimes.

## Accessibility

Penn State welcomes students with disabilities into the University's educational programs. Every Penn State campus has an office for students with disabilities. The Student Disability Resources Web site provides contact information for every Penn State campus: <http://equity.psu.edu/sdr/disability-coordinator>. For further information, please visit the Student Disability Resources Web site: <http://equity.psu.edu/sdr>.

In order to receive consideration for reasonable accommodations, you must contact the appropriate disability services office at the campus where you are officially enrolled, participate in an intake interview, and provide documentation: <http://equity.psu.edu/sdr/applying-for-services>. If the documentation supports your request for reasonable accommodations, your [campus's disability services office](#) will provide you with an accommodation letter. Please share this letter with your instructors and discuss the accommodations with them as early in your courses as possible. You must follow this process for every semester that you request accommodations.

## Academic Integrity

Cheating on an exam, quiz, or plagiarism will result in a failing grade in the class, and the issue will be pursued further under the university's regulations concerning academic integrity. This activity includes, but is not limited to, copying ideas or words from a source without appropriate citation, copying from another student's work, bringing answers to the exam (e.g., written on a sheet of paper, an arm, or a cap visor), or getting answers by phone text messages. Students who are unsure about what is meant by cheating should consult the College of the Liberal Arts web site: <http://laus.la.psu.edu/current-students/current-students/academic-integrity>

## Course Schedule

**Week 1** Course introduction. Human agency and the state of earth's systems, re-thinking the human place in nature, the many roads to conservation.

**Week 2** Why do our resource use patterns vary? Ecological and social theories of consumption, (ir)rationality, and subsistence preferences. Tinbergen's '4 Whys': proximate, developmental, functional, and historical explanations. Key concepts of trade-offs and fitness.

**Week 3** Conservation and the natural science behind it all: evolutionary ecology, ecological disturbance and disequilibrium, niche construction, trophic interactions. Key concepts of emergence and self-organization.

**Week 4** The web of life: are we in it? Humans in trophic interactions and food webs, net primary production, ecosystem productivity, land use, and long term disturbance. Key concepts of resilience, sustainability, and vulnerability.

**Week 5** Human institutions, conflicts of interests, and complex socio-ecological systems. The tragedy of the commons, collective action problems, conspicuous consumption, and property regimes. Key concepts of governance and organization of labor.

**Week 6** Introduction to the evolution of human-environment interactions: fire, cooking and the origins of human social behavior.

**Week 7** Interactions between archaic humans and their environments: the "Old Worlds", Eurasia and Africa 1.5 million years ago to 150 thousand years ago.

**Week 8** The origins of modern humans. Changing resource use and changing environments in the late Pleistocene, ~150 thousand years ago to 50 thousand years ago.

**Week 9** The Great Migration: the spread and ecological implications of modern humans in Australia, from 50 thousand years ago through to the Last Glacial Maximum ~20 thousand years ago.

**Week 10** Settling the Americas: new keystone species and novel ecosystems as humans colonize the continents ~15 thousand years ago.

**Week 11** The Austronesian Expansion: ecological change as we voyage through the Pacific Basin and Indian Oceans over the last ~4500 years.

**Week 12** Intensification: how hunting and gathering in traditional societies impacts ecosystems. The role of human fire, debates over Indigenous hunters and conservation. Ethnographic case study: Australian Aboriginal fire management.

**Week 13** The Bigger Picture: political ecology, ecosystem services, and the social dimensions of human-environment interactions. Ethnographic case study: African pastoral systems as complex socio-ecological systems.

**Week 14** Globalization, local communities, and Indigenous livelihoods: inequality, “entangled” practices, conservation, development, and policy.

**Week 15** From how to think to how to act: problems with “protectionism”. Dynamics of power, gender, inequality, security, and socio-political dilemmas of sustainability and environmental justice.