

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

Copy and paste **current** course information from Class Search/Course Catalog.

College/School	College of Liberal Arts and Sciences	Department/School	<u>School of Human Evolution and Social Change</u>
Prefix:	<u>AS</u>	Number:	<u>450</u>
	<u>M</u>	Title:	<u>Bioarchaeology</u>
			Units: <u>3</u>

Course description: **Surveys archaeological and physical anthropological methods and theories for evaluating skeletal and burial remains to reconstruct biocultural adaptation and lifeways. Prerequisite: ASM 101 or instructor approval.**

Is this a cross-listed course? No If yes, please identify course(s): _____

Is this a shared course? No If so, list all academic units offering this course: _____

*Note- For courses that are crosslisted and/or shared, a letter of support from the chair/director of **each** department that offers the course is required for **each** designation requested. By submitting this letter of support, the chair/director agrees to ensure that all faculty teaching the course are aware of the General Studies designation(s) and will teach the course in a manner that meets the criteria for each approved designation.*

Is this a permanent-numbered course with topics? No

If yes, all topics under this permanent-numbered course must be taught in a manner that meets the criteria for the approved designation(s). It is the responsibility of the chair/director to ensure that all faculty teaching the course are aware of the General Studies designation(s) and adhere to the above guidelines. _____ (Required)

Requested designation: Historical Awareness—H **Mandatory Review:** (Choose one)

*Note- a **separate** proposal is required for each designation.*

Eligibility: Permanent numbered courses **must** have completed the university's review and approval process. For the rules governing approval of omnibus courses, contact Phyllis.Lucie@asu.edu.

Submission deadlines dates are as follow:

For Fall 2018 Effective Date: October 1, 2017

For Spring 2019 Effective Date: March 10, 2018

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.

Checklists for general studies designations:

Complete and attach the appropriate checklist

- [Literacy and Critical Inquiry core courses \(L\)](#)
- [Mathematics core courses \(MA\)](#)
- [Computer/statistics/quantitative applications core courses \(CS\)](#)
- [Humanities, Arts and Design core courses \(HU\)](#)
- [Social-Behavioral Sciences core courses \(SB\)](#)
- [Natural Sciences core courses \(SQ/SG\)](#)
- [Cultural Diversity in the United States courses \(C\)](#)
- [Global Awareness courses \(G\)](#)
- [Historical Awareness courses \(H\)](#)

A complete proposal should include:

- Signed course proposal cover form
- [Criteria checklist](#) for General Studies designation being requested
- Course catalog description
- Sample syllabus for the course
- Copy of table of contents from the textbook and list of required readings/books

It is respectfully requested that proposals are submitted electronically with all files compiled into one PDF.

Contact information:

Name Chris Stojanowski E-mail christopher.stojanowski@asu.edu Phone 480-727-0768

Department Chair/Director approval: (Required)

Chair/Director name (Typed): Kaye Reed, Acting Director Chris Stojanowski Date: 3/9/18

Chair/Director (Signature): 

Arizona State University Criteria Checklist for

HISTORICAL AWARENESS [H]

Rationale and Objectives

Recent trends in higher education have called for the creation and development of historical consciousness in undergraduates now and in the future. History studies the growth and development of human society from a number of perspectives such as—political, social, economic and/or cultural. From one perspective, historical awareness is a valuable aid in the analysis of present-day problems because historical forces and traditions have created modern life and lie just beneath its surface. From a second perspective, the historical past is an indispensable source of identity and of values, which facilitate social harmony and cooperative effort. Along with this observation, it should be noted that historical study can produce intercultural understanding by tracing cultural differences to their origins in the past. A third perspective on the need for historical awareness is that knowledge of history helps us to learn from the past to make better, more well-informed decisions in the present and the future.

The requirement of a course that is historical in method and content presumes that "history" designates a sequence of past events or a narrative whose intent or effect is to represent both the relationship between events and change over time. The requirement also presumes that these are human events and that history includes all that has been felt, thought, imagined, said, and done by human beings. The opportunities for nurturing historical consciousness are nearly unlimited. History is present in the languages, art, music, literatures, philosophy, religion, and the natural sciences, as well as in the social science traditionally called History.

The justifications for how the course fits each of the criteria need to be clear both in the application tables and the course materials. The Historical Awareness designation requires consistent analysis of the broader historical context of past events and persons, of cause and effect, and of change over time. Providing intermittent, anecdotal historical context of people and events usually will not suffice to meet the Historical Awareness criteria. A Historical Awareness course will instead embed systematic historical analysis in the core of the syllabus, including readings and assignments. For courses focusing on the history of a field of study, the applicant needs to show both how the field of study is affected by political, social, economic, and/or cultural conditions AND how political, social, economic, and/or cultural conditions are affected by the field of study.

Revised October 2015

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

ASU--[H] CRITERIA			
THE HISTORICAL AWARENESS [H] COURSE MUST MEET THE FOLLOWING CRITERIA:			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. History is a major focus of the course.	Syllabus
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. The course examines and explains human development as a sequence of events influenced by a variety of factors.	Syllabus
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. There is a disciplined systematic examination of human institutions as they change over time.	Syllabus
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. The course examines the relationship among events, ideas, and artifacts and the broad social, political and economic context.	Syllabus
		THE FOLLOWING ARE NOT ACCEPTABLE:	
		• Courses that are merely organized chronologically.	
		• Courses which are exclusively the history of a field of study or of a field of artistic or professional endeavor.	
		• Courses whose subject areas merely occurred in the past.	

Course Prefix	Number	Title	General Studies Designation
ASM	450	Bioarchaeology	H

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 checklist)	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. History is the major focus of the course	The main goal of the course is to introduce students to the study of human biological remains from archaeological contexts to understand the lives of ancient peoples	Yellow highlights in the syllabus
2. Course examines and explains human development as a sequence of events influenced by a variety of factors	The course examines major changes in human development (e.g., epidemiological transition, introduction of agriculture, peopling of the world) using biocultural perspectives and explains these changes as a byproduct of multiple factors including human biology, cultural developments, social complexity, and environmental factors.	Blue highlights in the syllabus
3. Disciplined, systematic examination of human institutions as they change over time	The course uses a comparative, cross-cultural perspective to examine changes in human institutions. Course examines how bioarchaeological data are used to investigate changes in social relationships and cultural practices through time.	Green highlights in the syllabus
4. Examines relationship among events, ideas, and artifacts and the broad social, political, and economic context	The course examines how artifacts (including human biological remains) inform us about events in the past as well as the broad social, political, and economic contexts underlying those events. Course emphasizes how human lifeways and social relationships are influenced by broader sociopolitical and economic contexts.	Grey highlights in the syllabus

ASM 450: Bioarchaeology
Application for H Designation
March 10, 2018
Christopher M. Stojanowski

1. History is a major focus of the course

Documentation: Syllabus (modules 19-34), Readings yellow highlighted.

How Course Meets Spirit: This course examines the historical development of human societies over the last 10,000 years, told through the lens of cemetery remains and human skeletal data sets. Major historical topics include: the origins of agriculture, the development of complex societies, the origins of urban environments, the history of human migrations, and colonial encounters.

Specific Examples: This course covers major changes in human societies and institutions, but does so in contexts for which standard historical methods are not available (i.e., prehistory). These topics are explored primarily through the lens of past human biologies reflected in the remains of humans excavated from archaeological sites. The course is global in scope and considers data from roughly 15,000 years ago to the present. Data are generated on population relationships, mobility and migration, diet and health, and lifestyle and activity patterns that are couched within a specific historical or archaeological context. Problem orientations are context-dependent and seek to understand the effects of major lifestyle transitions on human institutions and lifestyles through time.

The course specifically addresses the following topics:

- 1) The history of human migration around the planet, which speaks to concepts of race and human variation.
- 2) The history of warfare and inter-personal violence, including assessment of when warfare began, what social function it fulfilled, and what precursors need to be in place for it to begin.
- 3) The development of complex societies throughout the Holocene beginning with forager band level groups and ending with complex states that developed in specific parts of the world. The issue here is why complexity developed in certain regions but not others.
- 4) The origins of food production as a major transition in social institutions that was distinct from foraging as a human form of social organization; food production also manifest at different times and in different places requiring an historical approach to understand why these changes occurred.
- 5) The origins of urban environments and their effects on human health and identity.
- 6) The effects of colonialism on indigenous communities during both the Age of Discovery and in previous imperial settings (Andes, Rome, Egypt).
- 7) The history of human burial and funerary practices, tracking the development of early religious beliefs based on funerary behaviors.

2. Course examines and explains human development as a sequence of events influenced by a variety of factors

Documentation: Syllabus (modules 19-34, Readings (gray highlighted))

How Course Meets Spirit: This course brings data from human skeletal remains to questions about the history of human social relationships and organizations. Social interaction is a major focus of the class and the content combines data from human skeletal biology with archaeological and historical records. Explanations invoke environmental, demographic, social, and political phenomena.

Specific Examples: In this class, human development is reflected in increasing social complexity, changes in subsistence practices, changes in patterns of interaction, expanding systems of social interaction including with increasingly distantly related individuals, increasing population size, and changes in health and lifestyle. Because bioarchaeology sits comfortably between the natural and social sciences, and also has a humanistic component to it, it draws readily from a variety of perspectives and considers a multitude of factors when making interpretations. For example, it is often stated that health declined with the advent of agriculture, despite the fact that population sizes increased. What explains this paradox? Bioarchaeological research considers environmental and ecological factors, demographic factors, factors related to mobility and landscape use, and the specific social context in order to interpret how health was affected by the Neolithic Revolution. In short, considering a variety of factors, including the historical context in which the Neolithic occurred, has resulted in an appreciation for the local effects of food production that was historically contingent as opposed with macro/global declarations that a specific human decision was/is beneficial or deleterious. A second example emerges from the unit on imperialism and colonial encounters. It is also generally the case that indigenous population size declined with European contact. And this is largely true. However, it is not universally so, and understanding why requires the class to consider factors related to demographics, trade routes, and social organization in addition to the standard explanation about immune response. These are two examples showing how bioarchaeological research integrates multiple perspectives and seeks complex, multifactorial explanations for the development of human social phenomena.

3 There is a disciplined systematic examination of human institutions as they change over time

Documentation: Syllabus (modules 19-34), Readings (green highlighted).

How Course Meets Spirit: Bioarchaeology is a method of inquiry that weds human skeletal biology with archaeological questions about past human societies. The class is structured around the concept of transitions and examining their effects on human societies. Baseline conditions are critical to understanding how sequences changed through time.

Specific Examples: The course uses temporal change as its primary framing device because bioarchaeology is inherently interested in understanding the consequences of major lifestyle transitions. For example, 12,000 years ago all of our ancestors were foragers, likely living in relatively small, mobile bands. Now these same types of human societies are quite rare and many of us live in complex state level societies. This transition had significant impacts on health, social organization, degree of mobility, diet, community organization, relationships within a

political landscape, and sense of identity. We still are dealing with the repercussions of this transition from foraging to food production. In this class we use archaeological data sets to trace the development of food production in the Near East, Europe, Egypt, the Sahara, sub-Saharan Africa, East Asia, and in multiple New World contexts. In all cases we begin with the earliest record of human subsistence, track how subsistence changed, and evaluate its effect on human institutions. A second example entails the origins of warfare where we survey the evidence for inter-personal violence in the past, track changes in the frequency of warfare through time, and try to understand the social and political role that warfare played at different times and places. A third example is the evidence for intentional burial, use of cemeteries, and funerary behavior. This too is addressed in an historical manner where the transition from isolated burial to collective burial is linked to changing perceptions of the landscape, ownership, complexity and hierarchy, and sedentism. Throughout the class, we consider the baseline condition and use evidence-based inferences to understand how these conditions changed over time and what the impacts of these changes were on human societies.

4. Course examines the relationship among events, ideas, and artifacts and the broad social, political and economic context.

Documentation: Syllabus (**modules 10-18**), Readings (**blue highlighted**).

How Course Meets Spirit: This course illustrates the use of social and behavioral science perspectives and data through discussions of theoretical approaches for investigating social science research. A key element of the course is the use of middle-range theory that links the observable data to broader theoretical perspectives. Historical and archaeological contexts provide the framework for interpreting skeletal signatures of lifestyle transitions.

Specific Examples: This class takes baseline observations of human skeletal biology (sex, age, diet, mobility, activity patterns, biological relatedness, health and disease) and links these to social questions on identity, landscape, community organization, violence, inequality, life style transitions, and grief and mourning with specific, historically-contingent contexts couched within regional archaeological research. The course also emphasizes middle-range theory, that is, theory that links the observable data collected from human remains to social science phenomenon, including social organization, identity, funerary beliefs, and interaction patterns. For example, using isotopic methods (modules 16,20), osteobiographic data (module 26), and inferences from body modification (module 23) we discuss how one identifies first generation African immigrants to the New World and then link these individuals to interpretations of health and diet (modules 10, 11, 12, 14, 15), activity patterns (modules 17) and trauma (module 13) to understand the social position of Africans within the colonial communities in which they lived. This research provides broad linkages between multiple types of data sets and research perspectives (historical, archaeological, skeletal) and synthesizes them within the context of theories of identity and inequality within the specific historical context of the New World. Unlike other classes that might have an H designation, however, the types of research discussed in this class provides a wholly different perspective that are complementary to, but not overlapping, perspectives from oral history, written texts, and artistic representation. That is, biological data is imprinted or reflect in the tissues of the body in a way that is not so easily manipulated. A second example from prehistoric North Africa considers the emergence of

pastoralism as an economic mode that was distinct from existing forager communities. Here, we use data from archaeology, skeletal biology, and linguistics to understand when pastoralism emerged and what the relationship between pastoralist and forager communities was over several millennia – told primarily through the lens of funerary remains and ethnographic analogy with contemporary populations. The key question is why some communities adopted pastoralism and others did not. This is a highly politically and ideologically complex question whose basis underlies the basic economies of these different populations. Finally, we discuss how community relationships and patterns of mate exchange were altered during the Spanish colonial period in Florida. This example illustrates how indigenous communities responded to Spanish Catholicism, population size decline, labor taxation, the dynamic nature of the slave trade, the English plantation economy, and patterns of frontier violence to forge new social identities between AD 1565 and 1706. This last example is a good example of how skeletal data are really entrenched within existing historical frameworks to provide novel understandings of the human past.

ASM 450 Bioarchaeology – Course Catalog Description

Surveys archaeological and physical anthropological methods and theories for evaluating skeletal and burial remains to reconstruct biocultural adaptation and lifeways. Prerequisite: ASM 101 or instructor approval.

Note: this syllabus is not a contract. It is subject to further change or revision, to best realize the educational goals of the course. Revisions will be announced in class or in course materials online with appropriate prior notice.

Session B: October 10 – November 30

Course Number: ASM450

Course Title: Bioarchaeology

Credits: 3 Credit Hours,

Faculty Name: Christopher Stojanowski, PhD

Office: SHESC (ANTH) 310

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Office hours: Arranged via email

Teaching Assistant: TBD

Office: TBD

Phone: na

Email address: TBD

Office hours: by email appointment

PRE-REQUISITES/CO-REQUISITES/ANTI-REQUISITES

Prerequisite: ASM 101 or instructor approval.

REQUIRED COURSE TEXTS/ READINGS

Mays, S. (2010). *The archaeology of human bones*, 2nd edition. New York: Routledge. *Please note this book is freely available as a e-book through the ASU libraries.*

Additional readings are listed in the course schedule below, which will be provided as PDFs through the course website.

COURSE DESCRIPTION

Bioarchaeology is a subfield of physical anthropology and archaeology that studies the lives of ancient peoples through their biological remains. This often includes analysis of human skeletal remains but other ancient biological materials are also part of bioarchaeological inquiry, including ancient DNA, ancient pathogens, and mummified soft tissues. **Through cross-cultural comparative study of human biology and behaviors, bioarchaeologists seek to understand our common humanity and unique local histories.** This course provides an overview of bioarchaeology's history, methodologies, "big questions", **and relationship to the broader social and historical sciences.** We will learn how to "read" a person's life history and experiences from their skeletal remains, which includes estimation of age, sex, stature, childhood health, disease experience, diet, injuries, and activity levels.

COURSE GOALS

A primary goal of bioarchaeology is to reconstruct how human societies have changed through time, varied throughout the world, and how this variation impacted the lives of individuals and whole communities in ways that still impact the global world. Using these data we will consider the following big questions:

- 1) How and when did humans come to populate the planet?
- 2) What is the evidence for the history of warfare and inter-personal violence? Is war inevitable, even in non state level societies?
- 3) What are the major lifestyles transitions that have occurred in human history, and what were the consequences of these transitions for human health and well-being?
- 4) What was the effect of colonialism on indigenous populations?
- 5) When did inequality arise and what were its effects on human well-being?
- 6) How did people express grief and mourning in the past? Are there universals to this aspect of the human lifecourse?
- 7) What factors of human experience were different from today? And what factors were similar?

Although many of these questions are posed by other social sciences this course adopts a unique perspective in viewing them through the lens of human skeletal biology. Although a trope, your life story is “written in your bones.”

LEARNING OUTCOMES

By the end of this course, each student will have demonstrated that they are able to:

- Visually identify the bones of the human skeleton and describe basic anatomical terminology and bone biology. [Assessment: lab practical]
- Describe proficiencies and best practices with regard to field and laboratory analysis of human mortuary sites. [Assessment: mid-term exam]
- Apply osteological standards of age and sex assessment to skeletal material. [Assessment: lab practical, mid-term exam]
- Discuss the methodological toolkit of bioarchaeology, including assessments of diet, health, mobility, and disease experience. [Assessment: lab practical, mid-term exam]
- Define the goals of paleopathology and distinguish non-specific and specific indicators of stress and growth disruption. [Assessment: mid-term exam]
- Apply the concept of differential diagnosis to medical case studies. [Assessment: analytical practical]
- Analyze bioarchaeological data to address questions about diet, disease, and lifestyle in human societies; to include analyses of light stable isotopes, pathology, phenotypic data, or age and sex tables. [Assessment: analytical practical]
- Evaluate ethical arguments surrounding human remains research. [Assessment: paper]
- Read and critically evaluate published research articles and case studies in bioarchaeology. [Assessment: paper]
- Develop multifactorial models for analyzing development of human institutions as product of biocultural evolution, environment, local histories, and global processes [Assessment: final exam, paper].
- Evaluate effectiveness of cross-cultural studies of human biology and cultural practices [Assessment: final exam, paper].
- Distinguish different social theoretical perspectives used in bioarchaeology and evaluate the middle-range linkages between data and social science interpretations in past societies. [Assessment: final exam].
- Evaluate current health and lifestyle differences throughout the world as the product of a specific set of historical circumstances using a deep time archaeological perspective. [Assessment: final exam, paper].

COURSE FORMAT

The course curriculum is structured into four units each with a specific desired learning outcome. The four intellectual units are as follows:

1) Establishing the Research Context – The student will learn the history of bioarcheology as a field of practice and its relationship to anthropology. The student will gain a basic understanding of bone cellular and macroscopic biology and become familiar with the names of different bones in the human body; learn the standards used for skeletal age and sex estimation; learn basic field and lab protocols, and discuss the ethical aspects of research involving human remains.

2) The Methodological Toolkit of Bioarchaeology - Students will learn the variety of data types and analyses used to infer aspects of lifestyle in past human communities. Topics to be covered include: stress and growth, paleopathology, dental disease and wear, trauma analysis, musculo-skeletal stress markers and cross-sectional geometry, light stable isotopes, biological distance, and biomolecular approaches.

3) Research Topics in Bioarchaeology – The student will learn about the major research topics addressed in bioarchaeological research. Topics include: diet and mobility, paleodemographic estimation, cultural body modification, mortuary and funerary practices, trophy taking, sex and gender, age identity, ethnicity and community, and osteobiography.

4) Answering the Big Questions in Bioarchaeology – The final course unit synthesizes the practical aspects of bioarchaeology and links them to major issues in the social sciences. In this unit the focus is on synthesis and big picture issues that relate the historical dimensions of bioarchaeology to modern problems and conditions. The primary focus of this unit is exploring why human remains research is valuable in the modern world.

COURSE REQUIREMENTS

Final grades for the course will be assigned on basis of the assignments described below. Detailed step-by-step instructions for each assignment are posted on the course site. Due dates are posted in the Course Schedule.

The course grade will be based on 100 points earned as follows:

1) **Mid-term exam** – 25 points. This exam covers topics covered in unit 1 and 2 of the class. The exam will consist of a series of short answer questions. DUE Friday November 2

2) **Practical Exam** – 15 points. This practical will cover the basics of bone biology, human osteology, and basic methods related to the biological profile. DUE Friday November 2

3) **Analytical Final Exam** – 25 points. This exam covers topics covered in unit 3 and 4 of the class. The exam will consist of a series of short answer questions and analytical problems for you to solve. The emphasis on this exam is interpretation of archaeological data sets. DUE Friday November 30

4) **Paper** – 35 points. DUE Friday November 30

Final Paper Prompt – Throughout this class we have discussed ethical concerns surrounding research on human remains from archaeological sites. Based on what you have learned throughout the semester, do you feel the benefits of archaeological research on human remains outweigh the potential ethical concerns with destructive sampling and excavation of prehistoric cemeteries. In your response please consider what the public good of bioarchaeology is with respect to social scientific understanding of human societies, humanistic aspects of bioarchaeology, and benefits to the natural sciences and medical fields. Please weigh these benefits against the concerns of descendant communities. In particular, your response should address the historical dimension of what a descendant community is.

FINAL GRADES

Final course grades are assessed as follows:

A	90-100	Excellent
B	80-89.99	Good
C	70-79.99	Average
D	60-69.99	Passing
E	<60	Failure
XE		Failure due to Academic Dishonesty

GRADING PROCEDURE

Grades reflect your performance on assignments and adherence to deadlines. Graded assignments will be available within 48 hours of the due date via the Gradebook. Exam grades will be posted on Blackboard.

GRADING DISPUTES

If a grade has been posted in error the student has 3 days from the date of posting to address this with the faculty member teaching the course. It is your responsibility to keep track of your grades as they post. This rule was put in place based on past years when students would challenge a grade from unit 1 on the last day of class to try to earn a new grade level.

EXTRA CREDIT

There will be no extra credit opportunities assigned for this course.

INCOMPLETES

A mark of "I" (incomplete) is given by the instructor when you have completed most of the course and are otherwise doing acceptable work but are unable to complete the course because of illness or other conditions beyond your control. You are required to arrange with the instructor for the completion of the course requirements. The arrangement must be recorded on the [Request for Grade of Incomplete form](http://students.asu.edu/forms/incomplete-grade-request) (<http://students.asu.edu/forms/incomplete-grade-request>).

LATE ASSIGNMENTS

Excuses for an assignment must be made and approved in advance of the due date of the assignment. Requests for excuses must be written, either on paper or email, and approval must be obtained, either by an email reply or by having the paper excuse signed. In order to get credit, with the late assignment you must turn in a copy of the email approval or signed written excuse. Notify the instructor BEFORE an assignment is due if an urgent situation arises and the assignment will not be submitted on time. Published assignment due dates (Arizona Mountain Standard time) are firm. Please follow the appropriate University policies to request an [accommodation for religious practices](#) or to accommodate a missed assignment [due to University-sanctioned activities](#).

GRADE APPEALS

ASU has formal and informal channels to appeal a grade. If you wish to appeal any grading decisions, please see <http://catalog.asu.edu/appeal>.

COMMUNICATING WITH THE INSTRUCTOR

This course uses a discussion board called "Hallway Conversations" for general questions about the course. Prior to posting a question, please check the syllabus, announcements, and existing posts. If you do not find an answer, post your question. You are encouraged to respond to the questions of your classmates. Email questions of a personal nature to your instructor or assigned TA. You can expect a response within 48 hours.

ONLINE COURSE

This is an online course. There are no face-to-face meetings. You can log into your course via MyASU or <https://my.asu.edu>.

EMAIL COMMUNICATIONS AND INTERNET

"THIS CONTENT IS PROTECTED AND MAY NOT BE SHARED, UPLOADED, SOLD, OR DISTRIBUTED."

ASU email is an [official means of communication](#) among students, faculty, and staff. All email communication for this class will be done through your ASU email account. Students are expected to read and act upon email in a timely fashion. Your email communications should be [professional](#) and succinct. Students bear the responsibility of missed messages and should check their ASU-assigned email regularly. All instructor correspondence will be sent to your ASU email account. For help with your email contact the [help desk](#).

COURSE TIME COMMITMENT

This four-credit course requires approximately 135 hours of work. Please expect to spend around 18 hours each week preparing for and actively participating in this course.

SUBMITTING ASSIGNMENTS

All assignments, unless otherwise announced, **MUST** be submitted to the designated area of Blackboard. Do not submit an assignment via email.

STUDENT STANDARDS

Students are required to read and act in accordance with university and Arizona Board of Regents policies, including:

The ABOR Code of Conduct: Arizona Board of Regents Policies 5-301 through 5-308:
<https://students.asu.edu/srr>

STUDENT CONDUCT

Required behavior standards are listed in the [Student Code of Conduct and Student Disciplinary Procedures, Computer, Internet, and Electronic Communications policy](#), and outlined by the [Office of Student Rights & Responsibilities](#). Anyone in violation of these policies is subject to sanctions. [Students are entitled to receive instruction free from interference](#) by other members of the class. An instructor may withdraw a student from the course when the student's behavior disrupts the educational process per [Instructor Withdrawal of a Student for Disruptive Classroom Behavior](#). Appropriate online behavior (also known as netiquette) is defined by the instructor and includes keeping course discussion posts focused on the assigned topics. Students must maintain a cordial atmosphere and use tact in expressing differences of opinion. Inappropriate discussion board posts may be deleted by the instructor. The Office of Student Rights and Responsibilities accepts [incident reports](#) from students, faculty, staff, or other persons who believe that a student or a student organization may have violated the Student Code of Conduct.

POLICY AGAINST THREATENING BEHAVIOR

All incidents and allegations of violent or threatening conduct by an ASU student (whether on-or off campus) must be reported to the ASU Police Department (ASU PD) and the Office of the Dean of Students. If either office determines that the behavior poses or has posed a serious threat to personal safety or to the welfare of the campus, the student will not be permitted to return to campus or reside in any ASU residence hall until an appropriate threat assessment has been completed and, if necessary, conditions for return are imposed. ASU PD, the Office of the Dean of Students, and other appropriate offices will coordinate the assessment in light of the relevant circumstances.

If you have any questions, please refer to [ACD-304-10 Course Syllabus](#) or contact P.F. Lengel or Jenny Smith in the CLAS Dean's Office at (480) 965-6506.

SEXUAL VIOLENCE/HARASSMENT

Title IX is a federal law that provides that no person be excluded on the basis of sex from participation in, be denied benefits of, or be subjected to discrimination under any education program or activity. Both Title IX and university policy make clear that sexual violence and harassment based on sex is prohibited. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can seek support, including counseling and academic support, from the university. If you or someone you know has been harassed on the basis of sex or sexually assaulted, you can find information and resources at <https://sexualviolenceprevention.asu.edu/faqs>.

"THIS CONTENT IS PROTECTED AND MAY NOT BE SHARED, UPLOADED, SOLD, OR DISTRIBUTED."

As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. ASU Counseling Services, <https://eoss.asu.edu/counseling>, is available if you wish discuss any concerns confidentially and privately.

ACADEMIC INTEGRITY

Academic honesty is expected of all students in all examinations, papers, laboratory work, academic transactions and records. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification and dismissal. For more information, see <http://provost.asu.edu/academicintegrity>.

If you fail to meet the standards of academic integrity in any of the criteria listed on the university policy website, sanctions will be imposed by the instructor, school, and/or dean. Academic dishonesty includes borrowing ideas without proper citation, copying others' work (including information posted on the internet), and failing to turn in your own work for group projects. Please be aware that if you follow an argument closely, even if it is not directly quoted, you must provide a citation to the publication, including the author, date and page number. If you directly quote a source, you must use quotation marks and provide the same sort of citation for each quoted sentence or phrase. You may work with other students on assignments, however, all writing that you turn in must be done independently. If you have any doubt about whether the form of cooperation you contemplate is acceptable, ask the TA or the instructor in advance of turning in an assignment. Please be aware that the work of all students submitted electronically can be scanned using SafeAssignment, which compares them against everything posted on the internet, online article/paper databases, newspapers and magazines, and papers submitted by other students (including yourself if submitted for a previous class).

Note: Turning in an assignment (all or in part) that you completed for a previous class is considered self-plagiarism and falls under these guidelines. Any infractions of self-plagiarism are subject to the same penalties as copying someone else's work without proper citations. Students who have taken this class previously and would like to use the work from previous assignments should contact the instructor for permission to do so.

PROHIBITION OF COMMERCIAL NOTE TAKING SERVICES

In accordance with [ACD 304-06 Commercial Note Taking Services](#), written permission must be secured from the official instructor of the class in order to sell the instructor's oral communication in the form of notes. Notes must have the notetaker's name as well as the instructor's name, the course number, and the date.

COURSE EVALUATION

Students are expected to complete the course evaluation. The feedback provides valuable information to the instructor and the college and is used to improve student learning. Students are notified when the online evaluation form is available.

SYLLABUS DISCLAIMER

The syllabus is a statement of intent and serves as an implicit agreement between the instructor and the student. Every effort will be made to avoid changing the course schedule but the possibility exists that unforeseen events will make syllabus changes necessary. Please remember to check your ASU email and the course site often.

STUDENT SUPPORT AND DISABILITY ACCOMMODATIONS

In compliance with the Rehabilitation Act of 1973, Section 504, and the Americans with Disabilities Act of 1990, professional disability specialists and support staff at the Disability Resource Center (DRC) facilitate a comprehensive range of academic support services and accommodations for qualified students with disabilities.

[Qualified students with disabilities may be eligible to receive academic support services and accommodations.](#) Eligibility is based on qualifying disability documentation and assessment of individual need. Students who believe they have a current and essential need for disability accommodations are [responsible for requesting accommodations and providing qualifying documentation](#) to the DRC. Every effort is made to provide reasonable accommodations for qualified students with disabilities. Qualified students who wish to request an accommodation for a disability should contact their campus DRC at: <http://www.asu.edu/studentaffairs/ed/drc/>

If you are a student in need of special arrangements for we will do all we can to help, based on the recommendations of these services. For the sake of equity for all students, we cannot make any accommodations without formal guidance from these services.

DROP AND ADD DATES/WITHDRAWALS

Please refer to the [academic calendar](#) on the deadlines to drop/withdraw from this course. Consult with your advisor and notify your instructor if you are going to drop/withdraw this course. If you are considering a withdrawal, review the following ASU policies: [Withdrawal from Classes](#), [Medical/Compassionate Withdrawal](#) and [Drop/Add and Withdraw](#).

COMPUTER REQUIREMENTS

This course requires a computer with Internet access and the following: Web browsers (Firefox, Explorer), [Adobe Acrobat Reader](#) (free,)[Adobe Flash Player](#) (free), Microphone (optional), and speaker.

TECHNICAL SUPPORT

This course uses Blackboard to deliver content. It can be accessed through MyASU at <http://my.asu.edu> or the Blackboard home page at <https://myasucourses.asu.edu>. To monitor the status of campus networks and services, visit the System Health Portal at <http://syshealth.asu.edu/>. To contact the help desk call toll-free at 1-855-278-5080.

STUDENT SUCCESS

This is an online course. To be successful: check the course daily, read announcements, read and respond to course email messages as needed, complete assignments by the due dates specified, communicate regularly with your instructor and peers, and create a study and/or assignment schedule to stay on track

CAMPUS RESOURCES

As an ASU student you have access to many resources on campus. This includes tutoring, academic success coaching, counseling services, financial aid, disability resources, career and internship help and many opportunities to get involved in student clubs and organizations.

- Tutoring: <https://studentsuccess.asu.edu/student-services/tutoring>
- Counseling Services: <http://students.asu.edu/counseling>
- Financial Aid: <http://students.asu.edu/financialaid>
- Disability Resource Center: <http://www.asu.edu/studentaffairs/ed/drc/>
- Major/Career Exploration: <http://uc.asu.edu/majorexploration/assessment>
- Career Services: <http://students.asu.edu/career>
- Student Organizations: <http://www.asu.edu/studentaffairs/mu/clubs/>

For more information about the School of Human Evolution and Social Change, including our degree programs, research opportunities and advising information, please go to: <https://shesc.asu.edu/student-life/undergraduate-advising>. Our advisors are always willing to discuss career and guidance options with you.

NOTES ON LETTERS OF RECOMMENDATION

Please be aware that I receive many requests from students to write letters of recommendation and therefore have set down these guidelines. Students should only request a letter of recommendation if s/he meets the following minimum criteria.

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- Has taken *more than* one in-person (upper-division) class with me if it is lecture, or have taken *one intensive* smaller class such as a seminar, lab, or practicum class with me (note: I do not write letters for students who take online classes with me)
- Received A or A+ in a 300 or 400 level course(s) taken with me
- Has spoken with me directly outside of class about career/academic goals

Note that if you meet these minimums it doesn't mean that I will agree to write you a letter. When asking for a letter of recommendation you **MUST** allow *more than two weeks* notice and provide me with the following. Everything listed here must be in *one* email.

- Unofficial Transcript
- Resume or CV
- Any application materials that are pertinent (e.g. personal statement/statement of purpose; answers to application questions; scholarship/job description; a paragraph stating why you are applying for X if you don't have a personal statement/answers to application questions; etc.).
- The information of to whom and where the letter is to be sent (e.g. email address or if it needs to be sent via the US Postal Service you must provide me with a stamped and addressed envelope).
- Clearly stated deadline of when the letter is due.

If I agree to write a letter of recommendation I will only be able to summarize your academic performance in my class(es) and will not be able to speak to any factors that have not been accessed in class. Lastly, if I agree to write you a letter, *you agree* to the following.

- You will let me know the outcome. This is important to me as I will want to know what is happening with you and to keep track of any positive outcomes. Also, this means a lot to me (and anyone else you request letters from).
- You agree to check with me before putting my name down on any subsequent applications (don't just assume you can keep putting my name down if I have only agreed to write one letter for you).

SCHEDULE OF READINGS AND ASSIGNMENTS

UNIT 1: Establishing the Research Context

Module	Topic	Readings
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1	Introduction to course	Larsen 2006a
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This module discusses anthropology as a field of social science inquiry and defines the importance of cross-cultural and comparative perspectives for understanding human cultural variation. Bioarchaeology is broadly defined as distinct from other areas of anthropology.

2	History of bioarchaeological inquiry	Knusel 2010; Stojanowski and Duncan, 2015
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This module discusses the historical development of bioarchaeology during the 1970s in US and UK contexts. The key point is the relationship of bioarchaeology to archaeology, biological anthropology, and forensic anthropology. Emphasis is placed on early female pioneers of the discipline and an outline of major research foci and how these have changed over time. In particular, the field has become more strongly aligned with the social sciences over the last two decades.

3	Ethics, NAGPRA, and Human Remains	Mays 2010 chapter 13; Riding In 2004 Walker 2008
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This course discusses the scientific value of research involving human remains. However, there are serious ethical issues surrounding bioarchaeology. In this module, we discuss the ethical debates about human remains research, including legal issues with regard to Native American archaeological materials. The history of ideas about the ethnical engagements of the field are outlined.

4	Field and lab methods	Mays 2010 chapter 2
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This module discusses archaeological field recovery techniques and introduces the basics of scientific practices within the lab. Emphasis is placed on proper recovery for preserving context and best practices for lab methods of human skeletal analysis. The module emphasizes the importance of context for asking basic questions about social science questions in the past.

5	Basic bone biology	Mays 2010 chapter 1
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Bone biology is the core of the observations we use this class. This module discusses the basics of bone as a living tissue within the body, including its microscopic and macroscopic structure and function.

6	Human osteology and anatomy	Byers 2011 chapter 2
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Human osteology is the study of the skeletal system, anatomical characteristics of specific bones, and aspects of anatomy that relate to muscle tissue attachment. The key goal of this module is to develop the basic terminology of the course, including the names of bones, sutures and joints, as well as anatomical directional terminology.

7	Age estimation 1	Nikita 2017 chapter 4 (135-149)
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The biological profile entails estimation of age and sex for all burials. In this module the topic of subadult age assessment is discussed including skeletal and dental indicators.

8	Age estimation 2	Nikita 2017 chapter 4 (149-162)
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This module discusses techniques for adult age estimation and the challenges related to chronological vs calendrical vs biological age. This introduces topics we return to later, namely that age is in some ways a socially constructed phenomenon.

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Sex is the second key component of the basic biological profile. Sexual dimorphism is introduced as a general concept and specific techniques are discussed for the human skeleton. Sex is differentiated from gender, which prefaces later discussions about gender identity in the past.

Labs 1-4 and UNIT 1 Exam DUE 10 pm Wednesday, January 17th

UNIT 2: The Methodological Toolkit of Bioarchaeology

Module Topic	Readings
10 Bone remodeling and Paleopathology	Waldron 2009 (12-23)

This module introduces the basic issues of paleopathological analysis, including preservation bias and the processes of skeletal response to disease processes. The concept of “health” is defined and linked to modern social science questions related to global health perspectives.

11 Paleopathology –non-specific infection and stress	Mays 2010 chapter 7 (197-216)
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Stress and insults to the body are often non-specific, that is no single disease can be linked to the bony response. This module discusses the types of indicators that reflect the body’s response to non-specific stress events. Both skeletal and dental indicators are defined. Research on stress and diet, lifestyle variation, and patterns of group interactions are discussed.

12 Paleopathology –differential diagnosis	Mays 2010 chapter 7
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The concept of differential diagnosis is defined and case studies are presented for the major diseases that impact the skeleton. This module discusses diagnosis in a clinical sense, but uses the specific diseases that impact the skeleton to discuss the concept of stigma as a social science construct. **An extended case study is presented on the history of leprosy, stigma and exclusion, the institution of the hospital, and its relationships to religious identity.**

13 Skeletal trauma	Mays 2010 chapter 9
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Trauma is any external force impacting the body. This module discusses the kinds of trauma one finds on the skeleton in past populations and emphasizes the importance of understanding the healing process for differentiating when the traumatic event occurred. Initial discussions of warfare and inter-personal violence are presented. **Domestic violence is developed in an historical context and the social mechanisms that underlie this form of violence are defined.** Finally, this module discusses structural violence, an important and current concern in the social sciences.

14 Dental disease and oral health (1)	Nikita 2017 chapter 8 (328-334)
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Dental disease is among the most common types of disease found in archaeological populations. In this module caries, tooth loss, periodontal disease, abscesses, and hypoplastic defects are defined with respect to their etiology. Patterns of variation in oral health **are linked to variation in social interaction and mobility patterns, status, and dietary focus in past communities.**

15 Dental disease and oral health (2), wear	Mays 2010 chapter 8 (228-235)
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A common feature of ancient populations is the high rate of tooth wear. Macrowear is the gross loss of tooth mass due to diet. Microwear is the microscopic pitting and scratching of tooth surfaces as a result of diet and food preparation techniques. Patterns of variation in dental wear **are linked to variation in social interaction and mobility patterns, status, and dietary focus in past communities.**

16 Isotopic methods	Mays 2010 chapter 10
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Stable isotopes are used to infer diet and mobility patterns in the past. This module **discusses the basis of isotopic research and the major kinds of isotopes used to study diet and mobility. Patterns of variation are linked to variation in social interaction and mobility patterns, status, and dietary focus in past communities.**

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17 **Mobility and behavior - biomechanics**

Mays 2010 chapter 5 (137-152)

Long bone measurements provide information on activity patterns in past populations. This module discusses methods of measuring the postcranial skeleton and the I beam model of Wolff's Law as it relates to functional biomechanics. Interaction and mobility are discussed with respect to social organization and status differences in the past. Gender and age-specific patterns of activity are also defined, including division of labor and labor taxation.

18 **Biological distance**

Hefner et al. 2016

Evolutionary inferences are often based on DNA. However, skeletal and dental data have a genetic basis and are used to infer population and inter-individual relationships at different scales. This module focused on the techniques used to study evolution in past populations, including post-marital residence and social ties related to multi-scalar notions of kinship, community, and ethnic identity.

Mid-term exam due November 2, 5pm

Practical exam due November 2, 5pm

UNIT 3: Topics in Bioarchaeology

Module Topic	Readings
19 Paleodiet (isotopes+dental path+ macro/microwear, calculus)	Eshed et al. 2006 Killgrove & Tykot 2013

Diet is one of the key aspects of a population's adaptation to their environment. This module synthesizes the methods used to infer diet and discusses the major questions posed in a global and cross-cultural sense about dietary quality and the emergence of major dietary transitions in the past. This module assumes a historical perspective and surveys changes in human diets across the major social transitions (forager to farmer) in Africa, the Near East, Europe, India, East Asia, and the New World.

20 Paleomobility (isotopes+long bone)	Eerkens et al. 2014 Killgrove & Montgomery 2016 Valentine et al. 2015
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Mobility is a key aspect of a population's relationship with its environment. This module synthesizes the techniques used in bioarchaeology to address the changes in human mobility practices with the onset of the Holocene. This module has a specific global emphasis in tracing the transition to settled life in different parts of the world including research in North America, South America, Africa, and Europe.

21 Health and disease experience (path, dental path, care)	Tilley 2015
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Populations with different diets and environments experienced drastically different health patterns. This module presents evidence for how health varies through time and space and focuses on the health effects of major dietary transition such as the emergence of agriculture and pastoralism and the transition from settled villages to large urban centers. Health is considered in its social context and issues related to health disparity, inequality, and resource distribution are explored. As with the previous modules we explore these changes in human health throughout the Old and New Worlds with an historical perspective focusing in major shifts and transitions. Epidemiological transition theory links this module with global health perspectives.

22 Paleodemography (age and sex)	Fernandez-Crespo & de-la-Rua 2015 Agarwal 2012
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Mortality and fertility are key demographic parameters that determine a population's long term historical trajectory. This module synthesizes information on age and sex and relates concepts of fertility and mortality to major transitions in human lifestyles. Paleodemographic trends are viewed historically and related to major social transitions, such as the Neolithic Revolution, industrialization, and the modern era.

23 Cultural modifications	Arcini 2005
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Body modification assumed many forms in different parts of the world. This module surveys the ways individuals have modified the body, with an emphasis on cross-cultural understanding of body modification as a near universal expression of human identity. The historical development of body modification is discussed in a global comparative perspective. We emphasize addressing questions of "why" individual's modified their bodies and adopt perspectives from psychology and other social sciences.

24 Group Identity	Stojanowski 2005
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Group identities such as ethnic group and community are important social structuring agents in the past and present. This module discusses bioarchaeological attempts to reconstruct expressions of ethnic identity in the past. Ethnogenesis emphasizes the fluid nature of ethnicity through time and we consider the historical endurance of ethnic identities as key aspects of social interaction. The module presses the question of what makes a group a group, and addresses the historically fluid nature of identities that are often seen as fixed

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and static in modern political discourse. Bioarchaeological approaches serve an important role of breaking down received wisdom and dogma about the nature of ethnic identities today.

25 **Age, sex, gender, childhood and aging** Walker & Cook 1998
Perry 2006

Gender and age identity are often cast in a western, normative light. In this module bioarchaeological data are used to differentiate sex and gender, define different types of age identity, and consider how age identity and gender identities differed in human populations across the planet. This module also emphasizes the historical development of age and gendered identities in a comparative perspective. By casting our net broad and deep we deconstruct notions of age and gender being fixed and immutable properties of the human species.

26 **Osteobiography** Boutin 2011

Bioarchaeology is about the human experience writ large and small. Osteobiography uses the techniques of bioarchaeology to tell the story of a specific person in the past. This work focuses on the individual as a microhistory of the time and place in which he or she lived. This module focuses on microscale inferences but works to place the individual within his or her society.

27 **Cannibalism, sacrifice, trophies** Billman et al. 2000
Dongoski et al. 2000
Andrushko et al. 2010
Okumura & Siew 2013

Building on the previous module that focuses on the individual, in this module the concept of postmortem self is introduced. That is, sociological perspectives recognize that the individual does not completely cease to exist once the physical body has died. Cannibalism, human sacrifice, and trophy hunting are all examples where the body is appropriated after death, often serving important political and social functions. The funerary event itself is often a highly symbolized event. We use a global comparative perspective to explore the origins of these practices.

UNIT 4: Answering the BIG Questions in Bioarchaeology

Module Topic	Readings
28 Peopling of the World and Race	Gravlee 2009

This module discusses decades of research on tracking the human dispersal around the planet. The module takes a historical perspective and emphasizes key events in the human past, such as the peopling of Oceania and the New World. Population movements throughout Africa over the last 10,000 years are also discussed. Embedded within this module is a discussion of what happens when different groups interact, and this is historically placed within the study of race – one of the most critical social science concepts debated today.

29 Warfare and Inter-personal violence	Osterholtz 2012 Steadman 2008 Walker 2001
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What is warfare? How ancient is the practice? This module synthesizes the global record of human prehistoric violence to address these questions. Key issues include defining warfare, identifying inter-personal violence, and understanding the social functions of warfare in past societies, with an emphasis on Andean, North American, African and European contexts. In addition, the concept of structural violence is introduced as a form of passive violence against peoples based on specific aspects of social organization, political ideology, and identity.

30 Biocultural Transitions	Humphrey et al. 2014; Lambert 2009 Lambert & Welker 2017; Larsen 2006a
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Twelve thousand years ago all of our ancestors hunted, gathered, and fished in a nomadic lifestyle. During the Holocene food production emerged at varying places and times. This module synthesizes bioarchaeological evidence for changes in diet, mobility, and lifestyle in Asia, Africa, Europe, and throughout the New World. The module adopts an historical approach in tracing the development of food producer economies, and links these developments to changes in social and political complexity. Through deep time perspectives the student will learn how current political systems were established as they appear today.

31 Colonialism and Empire	Kyle et al. 2016; Walker et al. 1989 Stojanowski 2004; Buzon & Richman 2007
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The emergence of states was perhaps the single most significant event in the political history of our species. States are expansive entities and the impacts on other communities are often significant. This module synthesizes bioarchaeological data on colonialism and empire, with an emphasis on four contexts: New World European colonialism, Andean pre-Hispanic state imperialism, ancient Rome, and ancient Egypt. We focus on changes in social institutions in response to the state expansionism and couch the discussion the context of agency theory.

32 Inequality	Robbins Schug et al. 2012 Buzon 2006 Sullivan 2004
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Settled life allowed for the accumulation of resources, which led to social inequality. This module synthesizes evidence for the emergence of inequality during the course of the Holocene. The module discusses evidence for inequality in multiple contexts around the world but focuses on areas that experienced the early emergence of food production, specifically the Nile Valley, the Near East, Europe, and East Asia.

Death is a reality of life, and humans have responded to death in myriad ways throughout time. This module discusses the mortuary practices of different populations and summarizes the history of death and burial (that is, when did intentional burial first occur), the emergence of cemeteries across the world, and the meaning associated with cremation, inhumation, secondary burial, and ancestor veneration. Death is conceived as a biological AND social process and the funerary ritual is presented as highly symbolic act whose meaning is often debated, even in contemporary populations.

The course closes with a summary of the insights that clearly link the past and present. That is, one of the goals of the class is to dispel false notions of “the way things were” and demonstrate that the problems of today were in some ways similar to the problems and challenges that people experienced in the past. The goal is to humanize the past and create a connection that espouses stewardship of archaeological resources.

Final exam due November 30, 5pm.

Final paper due November 30, 5pm.

Citations for Assigned Readings

Agarwal, S. C. (2012). The past of sex, gender, and health: Bioarchaeology of the aging skeleton. *American Anthropologist*, 114, 322-335.

Andrushko, V. A., Schwitalla, A. W., & Walker, P. L. (2010). Trophy-taking and dismemberment as warfare strategies in prehistoric central California. *American Journal of Physical Anthropology*, 141, 83-96.

Arcini, C. (2005). The Vikings bare their filed teeth. *American Journal of Physical Anthropology*, 128, 727-733.

Billman, B., Lambert, P., & Leonard, B. (2000) Cannibalism, warfare, and drought in the Mesa Verde region during the twelfth century A.D. *American Antiquity*, 65(1), 145-178.

Blakey, M. (2001). Bioarchaeology of the African diaspora in the Americas: its origin and scope. *Annual Review of Anthropology*, 30, 387-422.

Boutin, A. T. (2011). Crafting a bioarchaeology of personhood: osteobiographical narratives from Alalakh. In A. Baadsgaard, A. T. Boutin, & J. E. Buikstra (Eds.), *Breathing new life into the evidence of death: contemporary approaches to bioarchaeology* (pp. 109-134). Santa Fe: SAR Press.

Buikstra, J. E., Cook, D. C., & Bolhofner, K. L. (2017). Introduction: scientific rigor in paleopathology. *International Journal of Paleopathology*, 19, 80-87.

Buikstra, J. E. & Ubelaker, D. H. (Eds.). (1994). *Standards for data collection from human skeletal remains*. Fayetteville: Arkansas Archaeological Survey Research Series No. 44.

Buzon, M. R. (2006). Health of non-elites at Tombos: nutritional and disease stress in New Kingdom Nubia. *American Journal of Physical Anthropology*, 130, 26-37.

Buzon, M. R., Eng, J. T., Lambert, P. M., & Walker, P. L. (2005). Bioarchaeological methods. In H. D. G. Maschner & C. Chippindale (Eds.) *Handbook of archaeological methods: Volume II* (pp. 871– 918). Walnut Creek, CA: Altamira.

Dongoske, K. E., Martin, D. L., & Ferguson, T. J. (2000). Critique of the claim of cannibalism at Cowboy Wash. *American Antiquity*, 65(1), 179-190.

Eerkens, J. W., Barford, G. H., Jorgenson, G. A., & Peske, C. (2014). Tracing the mobility of individuals using stable isotope signatures in biological tissues: “locals” and “non-locals” in an ancient case of violent death from Central California. *Journal of Archaeological Science*, 41, 474-481.

Eshed, V., Gopher, A., & Hershkovitz, I. (2006). Tooth wear and dental pathology at the advent of agriculture: new evidence from the Levant. *American Journal of Physical Anthropology*, 130, 145-159.

Hefner, J. T., Pilloud, M. A., Buikstra, J. E., & Vogelsberg, C. C. M. (2016). A brief history of biological distance analysis. In M. A. Pilloud & J. T. Hefner (Eds.), *Biological distance analysis: forensic and bioarchaeological perspectives* (pp. 3-22). London: Academic Press.

Humphrey, L. T., De Groote, I., Morales, J., Barton, N., Collcutt, S., Ramsey, C. B., & Bouzouggar, A. (2014). Earliest evidence for caries and exploitation of starchy plant foods in Pleistocene hunter-gatherers from Morocco. *Proceedings of the National Academy of Science*, 111, 954-959.

Killgrove, K., & Montgomery, J. (2016). All roads lead to Rome: exploring human migration to the Eternal City through biochemistry of skeletons from two Imperial-era sites (1st-3rd c AD). *PLOS ONE*, 11(2), e0147585. doi: 10.1371/journal.pone.0147585.

Killgrove, K., & Tykot, R. H. (2013). Food for Rome: a stable isotope investigation of diet in the Imperial period (1st-3rd centuries AD). *Journal of Anthropological Archaeology*, 32(1), 28-38.

Lambert, P. M. (2006). Infectious diseases among enslaved African Americans at Eaton's Estate, Warren County, North Carolina, 1830-1850. *Memorias do Instituto Oswaldo Cruz*, 101(Sup.II), 107-117.

Lambert, P. M. (2009). Health vs. fitness: competing themes in the origins and spread of agriculture? *Current Anthropology*, 50, 603-608.

Lambert, P. M., & Welker, M. (2017). Agricultural transitions and traumatic injury risk: a view from the American Southeast and beyond. *American Journal of Physical Anthropology*, 162, 120-142.

Larsen, C.S. (2006a). The changing face of bioarchaeology: an interdisciplinary science. In J. E. Buikstra & L. A. Beck (Eds.), *Bioarchaeology: the contextual analysis of human remains* (pp. 359-374). Burlington, MA: Academic Press.

Larsen, C. S. (2006b). The agricultural revolution as environmental catastrophe: implications for health and lifestyle in the Holocene. *Quaternary International*, 150, 12-20.

Lozada, M. C. (2011). Marking ethnicity through premortem cranial modification among the Pre-Inca Chiribaya, Peru. In M. Bonogofsky (Ed.), *The bioarchaeology of the human head* (pp. 228-240). Gainesville: University Press of Florida.

Martin, D. L., R. P. Harrod, & V. R. Pérez. (2013). *Bioarchaeology: an integrated approach to working with human remains*. New York: Springer-Verlag.

Mays, S. (2010). *The archaeology of human bones*, 2nd edition. New York: Routledge.

Milner, G. R., & Jacobi, K. P. (2006). A New Deal for human osteology. In J. E. Buikstra & L. A. Beck (Eds.), *Bioarchaeology: the contextual analysis of human remains* (pp. 113-129). Burlington, MA: Academic Press.

Nikita, E. (2017). *Osteoarchaeology: a guide to the macroscopic study of human skeletal remains*. London: Academic Press.

Okumura, M., & Siew, Y. (2013). An osteological study of trophy heads: unveiling the headhunting practices of Borneo. *International Journal of Osteoarchaeology*, 23, 685-697.

Osterholtz, A. J. (2012). The social role of hobbling and torture: violence in the prehistoric Southwest. *International Journal of Paleopathology*, 2, 148-155.

Parker Pearson, M. (1999). *The archaeology of death and burial*. College Station: Texas A&M University Press.

Perry, M. A. (2006). Redefining childhood through bioarchaeology: toward an archaeological and biological understanding of children in antiquity. *Archaeological Papers of the American Anthropological Association*, 15, 89-111.

Rasmussen, M. et al. (2015). The ancestry and affiliations of Kennewick Man. *Nature*, 523, 455-458.

Reitsema, L. J., & McIlvaine, B. K. (2014). Reconciling “stress” and “health” in physical anthropology: what can bioarchaeologists learn from the other subdisciplines? *American Journal of Physical Anthropology*, 155,181-185.

Riding In, J. (2004). Decolonizing NAGPRA. In W. A. Wilson & M. Yellow Bird (Eds.), *For indigenous eyes only: a decolonization handbook* (pp. 53-66). Santa Fe: School of American Research.

Robbins Schug, G., Gray, K., Mushrif-Tripathy, V., & Sankhyan, A. R. (2012). A peaceful realm? Trauma and social differentiation at Harappa. *International Journal of Paleopathology*, 2(2), 136-147.

Steadman, D. W. (2008). Warfare related trauma at Orendorf, a Middle Mississippian Site in West-Central Illinois. *American Journal of Physical Anthropology*, 136, 51-64.

Stojanowski, C. M. (2004). Population history of native groups in pre- and postcontact Spanish Florida: aggregation, gene flow, and genetic drift in the Southeastern U.S. Atlantic Coast. *American Journal of Physical Anthropology*, 123, 316-332.

Stojanowski, C. M. (2005). The bioarchaeology of identity in Spanish colonial Florida: social and evolutionary transformation before, during, and after demographic collapse. *American Anthropologist*, 107(3), 417-431.

Stojanowski, C. M., & Duncan, W. N. (2015). Engaging bodies in the public imagination: bioarchaeology as social science, science, and humanities. *American Journal of Human Biology*, 27, 51-60.

Sullivan, A. (2004). Reconstructing relationships among mortality, status, and gender at the medieval Gilbertine Priory of St. Andrew, Fishergate, York. *American Journal of Physical Anthropology*, 124, 330-345.

Tilley, L. (2015). Setting the scene for a bioarchaeology of care. In L. Tilley (Ed.) *Theory and practice in the bioarchaeology of care* (pp. 13-64). New York: Springer.

Ubelaker, D. H. (2006). The changing role of skeletal biology at the Smithsonian. In J. E. Buikstra & L. A. Beck (Eds.), *Bioarchaeology: the contextual analysis of human remains* (pp. 73-81). Burlington, MA: Academic Press.

Valentine, B., Kamenov, G. D., Kenoyer, J. M., Shinde, V., Mushrif-Tripathy, V., Otarola-Castillo, E., et al. (2015). Evidence for patterns of selective urban migration in the greater Indus Valley (2600-1900 BC): a lead and strontium isotope mortuary analysis. *PLoS ONE*, 10(4), e0123103.

Walker, P. L. (2001). A bioarchaeological perspective on the history of violence. *Annual Review of Anthropology*, 30, 573-596.

Walker, P.L. (2008). Bioarchaeological ethics: a historical perspective on the value of human remains. In M.A. Katzenberg & S.R. Saunders (Eds.), *Biological Anthropology of the Human Skeleton* (pp. 3-41). Hoboken, NJ: John Wiley & Sons.

Walker, P. L., & Cook, D. C. (1998). Gender and sex: vive la difference. *American Journal of Physical Anthropology*, 106, 255-259.

Walker, P. L., Lambert, P. M., & DeNiro, M. J. (1989). The effects of European contact on the health of California Indians. In D. H. Thomas (Ed.), *Columbian consequences, Volume I: archaeological and historical perspective on the Spanish borderlands West* (pp. 349-364). Washington, D.C.: Smithsonian Institution Press.

Weston, D. A. (2008). Investigating the specificity of periosteal reactions in pathology museum specimens. *American Journal of Physical Anthropology*, 137, 48-59.

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THE ARCHAEOLOGY OF HUMAN BONES

SECOND EDITION

Simon Mays

 **Routledge**
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PREFACE

Archaeology is about people and how they lived in the past. The study of the physical remains of those people is therefore a central component of archaeological enquiry. This involves primarily the analysis of skeletal remains (oste archaeology), as bones and teeth are the only human remains that survive in most circumstances. The aim of this book is to illustrate the sorts of information that can be derived from the study of ancient human remains and how this can be harnessed to address questions of general archaeological interest. We shall generally be concerned with the remains of anatomically modern man (*Homo sapiens sapiens*), rather than with tracing the story of human evolution.

In the 12 years since the publication of the first edition of this book there have been many important developments in oste archaeology. In the second edition, every chapter has been updated to reflect this. Perhaps the most important methodological advances since the first edition have been in the areas of stable isotope and DNA analyses. In this edition, there is a chapter devoted to stable isotopic work, and its application to both dietary and mobility studies is described. The chapter on DNA has been completely rewritten. The text has also been expanded to encompass areas omitted from the first edition so as to make the coverage of the field more comprehensive. There is a new chapter on post-cranial metric variation, with an emphasis on biomechanical analyses. There is also a new chapter on ethics and human remains. Ethical matters, particularly those surrounding the question of whether archaeological human remains should be kept in museums for future study or should be reburied, are some of the most challenging issues faced by oste archaeology.