



ARIZONA STATE UNIVERSITY

GENERAL STUDIES COURSE PROPOSAL COVER FORM

Course information:

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

Academic Unit: College of Liberal Arts and Sciences, Department: Forensic Anthropology, School of Human Evolution and Social Change, Subject: ASM, Number: 275, Title: Forensic Anthropology, Units: 3-4

Requested designation: (Choose One)

Note- a separate proposal is required for each designation requested

Eligibility:

Permanent numbered courses must have completed the university's review and approval process. For the rules governing approval of omnibus courses, contact the General Studies Program Office at (480) 965-0739.

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.

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, Fine Arts and Design core courses (HU)
Social and Behavioral Sciences core courses (SB)
Natural Sciences core courses (SQ/SG)
Global Awareness courses (G)
Historical Awareness courses (H)
Cultural Diversity in the United States courses (C)

A complete proposal should include:

- Signed General Studies Program Course Proposal Cover Form
Criteria Checklist for the area
Course Syllabus
Table of Contents from the textbook, and/or lists of course materials

Contact information:

Name: Melissa Beresford, Phone: 480-965-9649, Mail code: 2402, E-mail: melissa.beresford@asu.edu

Department Chair/Director approval: (Required)

Chair/Director name (Typed): Alexandra Brewis Slade, Date: 7/2/15, Chair/Director (Signature):

ALEXANDRA BREWIS SLADE  
EXECUTIVE DIRECTOR

**MEMO**

*To: University General Studies Council*

*From: Alexandra Brewis Slade, Director SHESC*

*Re: Retroactive General Studies Designation for ASM 275 Forensic Anthropology*

*Date: 07/02/15*

Dear General Studies Council,

We are respectfully asking for the SG/general studies designation for ASM 275: Forensic Anthropology be **effective** Spring 2016. We are scheduled to teach this class in Spring 2016.

Also, we would like to note that we have currently submitted a request through Curriculum Changemaker to establish the course as a 3-4 variable unit course.

Cordially,



Alexandra Brewis Slade, PhD  
Director & President's Professor

## Arizona State University Criteria Checklist for

### NATURAL SCIENCES [SQ/SG]

#### **Rationale and Objectives**

Public scientific literacy, critical for sound decisions on scientifically infused issues such as climate change, includes understanding of basic science concepts, such as the fundamental behavior of matter and energy. It also includes the understanding that "science" is not an encyclopedic collection of facts. Rather, it is a process of exploration that embraces curiosity, inquiry, testing, and communication, to reduce uncertainty about nature. Absent understanding of scientific concepts and of the nature of science, science and pseudoscience are difficult to distinguish, and normal scientific disagreements may be misinterpreted as ideological or political disputes. The goal of the natural sciences (SQ/SG) requirement, including the laboratory requirement, is to instill understanding of basic science content and of the nature of science in every ASU graduate.

10/1989

REV: 1/1991, 3/1991, 1/2000, 10/2008, 4/2014

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

<b>ASU--[SQ] CRITERIA</b>			
<b>I. - FOR ALL QUANTITATIVE [SQ] NATURAL SCIENCES CORE AREA COURSES, THE FOLLOWING ARE CRITICAL CRITERIA AND MUST BE MET:</b>			
YES	NO		Identify Documentation Submitted
<input type="checkbox"/>	<input type="checkbox"/>	A. Course emphasizes the mastery of basic scientific principles and concepts.	
<input type="checkbox"/>	<input type="checkbox"/>	B. Addresses knowledge of scientific method.	
<input type="checkbox"/>	<input type="checkbox"/>	C. Includes coverage of the methods of scientific inquiry that characterize the particular discipline.	
<input type="checkbox"/>	<input type="checkbox"/>	D. Addresses potential for uncertainty in scientific inquiry.	
<input type="checkbox"/>	<input type="checkbox"/>	E. Illustrates the usefulness of mathematics in scientific description and reasoning.	
<input type="checkbox"/>	<input type="checkbox"/>	F. Includes <b>weekly</b> laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.	
<input type="checkbox"/>	<input type="checkbox"/>	G. Students submit written reports of laboratory experiments for constructive evaluation by the instructor.	
<input type="checkbox"/>	<input type="checkbox"/>	H. Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.	
<b>II. - AT LEAST ONE OF THE FOLLOWING ADDITIONAL CRITERIA MUST BE MET WITHIN THE CONTEXT OF THE COURSE:</b>			
<input type="checkbox"/>	<input type="checkbox"/>	A. Stresses understanding of the nature of basic scientific issues.	
<input type="checkbox"/>	<input type="checkbox"/>	B. Develops appreciation of the scope and reality of limitations in scientific capabilities.	
<input type="checkbox"/>	<input type="checkbox"/>	C. Discusses costs (time, human, financial) and risks of scientific inquiry.	
<b>NOTE: CRITERIA FOR [SG] COURSES BEGIN ON PAGE 4.</b>			

III. - [SQ] COURSES MUST ALSO MEET THESE ADDITIONAL CRITERIA:			
YES	NO		Identify Documentation Submitted
<input type="checkbox"/>	<input type="checkbox"/>	A. Provides a substantial, quantitative introduction to fundamental principles governing behavior of matter and energy, in physical or biological systems.	
		B. Includes a college-level treatment of some of the following topics ( <b>check all that apply below</b> ):	
<input type="checkbox"/>	<input type="checkbox"/>	a. Atomic and molecular structure	
<input type="checkbox"/>	<input type="checkbox"/>	b. Electrical processes	
<input type="checkbox"/>	<input type="checkbox"/>	c. Chemical processes	
<input type="checkbox"/>	<input type="checkbox"/>	d. Elementary thermodynamics	
<input type="checkbox"/>	<input type="checkbox"/>	e. Electromagnetics	
<input type="checkbox"/>	<input type="checkbox"/>	f. Dynamics and mechanics	
<b>[SQ] REQUIREMENTS CANNOT BE MET BY COURSES:</b>			
<ul style="list-style-type: none"> <li>• Presenting a qualitative survey of a discipline.</li> <li>• Focusing on the impact of science on social, economic, or environmental issues.</li> <li>• Focusing on a specific or limiting but in-depth theme suitable for upper-division majors.</li> </ul>			

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

<b>ASU--[SG] CRITERIA</b>			
<b>I. - FOR ALL <i>GENERAL</i> [SG] NATURAL SCIENCES CORE AREA COURSES, THE FOLLOWING ARE CRITICAL CRITERIA AND MUST BE MET:</b>			
YES	NO		Identify Documentation Submitted
<input checked="" type="checkbox"/>	<input type="checkbox"/>	1. Course emphasizes the mastery of basic scientific principles and concepts.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	2. Addresses knowledge of scientific method.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	3. Includes coverage of the methods of scientific inquiry that characterize the particular discipline.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	4. Addresses potential for uncertainty in scientific inquiry.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	5. Illustrates the usefulness of mathematics in scientific description and reasoning.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	6. Includes <b>weekly</b> laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	7. Students submit written reports of laboratory experiments for constructive evaluation by the instructor.	Syllabus, labs, textbook
<input checked="" type="checkbox"/>	<input type="checkbox"/>	8. Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.	Syllabus, labs, textbook
<b>II. - AT LEAST ONE OF THE ADDITIONAL CRITERIA THAT MUST BE MET WITHIN THE CONTEXT OF THE COURSE:</b>			
<input type="checkbox"/>	<input type="checkbox"/>	A. Stresses understanding of the nature of basic scientific issues.	
<input type="checkbox"/>	<input type="checkbox"/>	B. Develops appreciation of the scope and reality of limitations in scientific capabilities.	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	C. Discusses costs (time, human, financial) and risks of scientific inquiry.	Syllabus

<b>[SG] REQUIREMENTS CANNOT BE MET BY COURSES:</b>		
	<ul style="list-style-type: none"><li>• Presenting a qualitative survey of a discipline.</li></ul>	
	<ul style="list-style-type: none"><li>• Focusing on the impact of science on social, economic or environmental issues.</li></ul>	
	<ul style="list-style-type: none"><li>• Focusing on a specific or limiting but in-depth theme suitable for upper-division majors.</li></ul>	

Course Prefix	Number	Title	General Studies Designation
ASM	275	Forensic Anthropology	SG

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

Criteria (from checksheet)	How course meets spirit (contextualize specific examples in next column)	Please provide detailed evidence of how course meets criteria (i.e., where in syllabus)
See attached document	See attached document	See attached document
See attached document	See attached document	See attached document
See attached document	See attached document	See attached document
See attached document	See attached document	See attached document



**ASM 275: Forensic Anthropology**  
**Application for SG Credit**  
**June 16, 2015**  
**Christopher M. Stojanowski**

**I.1 Course emphasizes the mastery of basic scientific principles and concepts.**

*Documentation: Syllabus (modules 1, 2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18), labs (1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13), Byers chapters 1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, Readings by Davis and Halla-Borrelli 2008*

*How Course Meets Spirit:* Presents basic concepts of numeracy, error testing, sources of error, accuracy, precision and extrapolation. Presents value of experimental approach within applied forensic problem orientations.

*Specific Examples:*

Forensic anthropology applies observations from known cases to unknown cases to aid death investigations. The key scientific aspects of this process are testability, repeatability, extrapolation, and universality. For example, one of the basic analyses discussed is that of sex assessment. This work is based on using skeletons of known sex, identifying observations that differentiate males and females, testing the distribution of these observations as universally as possible (in other populations from around the world), and then applying these standards to real life cases where the error rates are known. Because the data is quantitative, the course also provides content on basic scientific issues such as data scales (lab 1), basic descriptive statistics (lab 1), and the concepts of accuracy, precision and observer error (lab 2). Within this context the difference between the average value and the overall range of values is also emphasized as this speaks to extrapolation and universality. A key aspect of basic research in the forensic sciences is that of uncertainty (discussed below). Therefore, in terms of basic scientific concepts the course presents information on data scale and type, observation, hypothesis testing, repeatability, error, and quantification of certainty. Basic scientific principles are not just discussed in the beginning of the course, however. The entire class is structured to lead students through a complete forensic investigation, from discovery, to recovery and initial laboratory analysis, to identification of the victim, to ascertaining the cause and manner of death. As such, the same principles are applied and discussed throughout, varying only the specific type of data (sex, age, trauma type).

**I.2 Addresses knowledge of scientific method.**

*Documentation: Syllabus (modules 1, 2, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18), labs (1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13), Byers chapters 1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16, Readings by Davis and Halla-Borrelli 2008; Coyle et al 2005; Morton 2006; Allaire and Manheim 2008*

*How Course Meets Spirit:* Presents information on how data type and scale affects analyses, presents information on error testing, pattern matching and use of theory to explain data pattern. Has heavy emphasis on experimental design within applied settings.

*Specific Examples:*

This course addresses knowledge of the scientific method through its emphasis on research design and hypothesis testing within a forensic framework and through an exploration of how

experimentation is used throughout the process of advancing knowledge within a forensic anthropological framework. The theme of carefully designed experiments is most fully developed in two specific topics. First, during discussion of the post-mortem interval (see in particular module 8 and lab 4) students learn how researchers determine time since death using a variety of observations whose values are only known through careful experimental design using known test cases. In particular, the famous Body Farm provides a key example of the role of experimental design in forensics research; body decomposition is recorded in different micro-climates and subjected to repeatability studies and validation. Basic experimental research is how we know the timings of various stages of body decomposition, from initial post-mortem changes (such as rigor mortis) to complete skeletonization. Second, the science of cutmark analysis is one where hypothesis testing and experimental design is crucial to establishing diagnostic criteria capable of distinguishing different types of saws used to process human remains (module 18 and lab 13). In fact, much of what we term taphonomy (the study of what happens to a body after it dies until the time of discovery) is based on careful experimental testing of cause and effect. Therefore, the entire basis of forensic anthropology was built through the application of the scientific method. In addition, certain topics within forensic anthropology lend themselves well to the use of scientific theory to explain phenomena. For example, sex assessment is based on sexual dimorphism, and humans are sexually dimorphic due to our evolutionary history. This is all discussed in the lectures pertaining to this topic. Another example of the application of scientific theory to forensic anthropology involves phylogenetic theory, the concept of subspecies, and the application of the historical process of subspecies creation in the human past. In effect, I am talking about races but couched within evolutionary theory.

### **I.3 Includes coverage of the methods of scientific inquiry that characterize the particular discipline.**

*Documentation: Syllabus (modules 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23), labs (1-14), Byers chapters (all), Readings (all).*

*How Course Meets Spirit:* The course covers a multitude of analyses designed to identify victims of crimes and to ascertain the cause and manner of death, archaeological field methods are presented. Methods are physical in the sense that human anatomy anchors much of the work.

#### *Specific Examples:*

One of the primary criticisms people have of forensic anthropology is that it is too applied and atheoretical. This is a fair assessment because the field is specifically designed to solve real world problems through the application of biological observations of the human body. As such the class is completely methodological in focus and it would be impossible to list all examples without summarizing the entire course. Students learn context and application, but the majority of the class is designed around the methods of field recovery, methods of ascertaining the biological profile of a crime victim, methods for determining what happened to that individual, and methods for establishing a positive identification using ante-mortem medical records or DNA. Most of the labs are designed to teach these methods and to have students apply them within constrained decision-making exercises.

#### **I.4 Addresses potential for uncertainty in scientific inquiry.**

*Documentation: Syllabus (modules 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23), Byers chapters 1, 3, 5, 7, 8, 9, 10, 11, 12, 13, 14, 16), readings by Coyle et al. 2005; Ubelaker et al. 1991; Rothwell, 1995; Morton, 2006; Allaire and Manheim, 2008*

*How Course Meets Spirit:* Addresses error testing, rules of evidence and the importance of stated margins of error and repeatability for use of observational research in court room proceedings. Explored the concept of universality with respect to pattern matching.

##### *Specific Examples:*

Uncertainty is at the root of any forensics discipline and the potential for uncertainty is discussed throughout the course. A key concept that permeates the course, in the wake of the Daubert ruling, is one of establishing a probability or likelihood for any given forensic statement. How certain are specific sex assessments? Which features provide greater certainty of sex assessment? How does uncertainty affect age estimates and what are the error ranges of these estimates. The same principles apply to stature and ancestry assessment. In the case of ancestry assessment we also discuss why there is uncertainty in ancestry assessment while introducing the concepts of social and biological race. Forensics, in short, is the process of trying to establish fact in the face of scrutiny of error so the field is completely and constantly concerned with establishing how a particular fact is established. Most of the methods discussed in the course are presented in terms of their diagnostic ability. The course asks how we know something and how do we know that a particular signature is uniquely reflective of what we say it is. For example, in module 18 we discuss the uniqueness of the cuts produced on the human skeleton by different types of saws and ask how certain we are that two different saws could not produce cut marks that look exactly the same. The same principles permeate the discussion of gunshot wounds (module 15) where the goal of linking skeletal trauma to a specific bullet caliber or type or firearm is emphasized. In short, this course is the perfect one to discuss uncertainty because false positives and false negatives are at the forefront of what forensic anthropologists try to avoid. The lecture on forensic odontology (ante-mortem dental records, bite mark analysis) is perfect for discussing uncertainty because it is based on pattern matching where the universality of patterns has been questioned. Odontology also represents an area of practice under serious scrutiny in the wake of new rules of evidence and admissibility standards.

#### **I.5 Illustrates the usefulness of mathematics in scientific description and reasoning.**

*Documentation: Syllabus (modules 8, 9, 10, 11, 12, 13); Labs 1, 2, 4, 8, 9, 10, 13)*

*How Course Meets Spirit:* Uses multivariate output to explore pattern matching techniques, describes sources of variation and how these are characterized, uses different data scales and methods to illustrate mathematical description of patterns.

##### *Specific Examples:*

The second section of the course, in particular introduced the concepts of mathematical scaling, interpolation, and extrapolation of measurement standards used in forensic sex and age assessment (modules, 9, 10, 11). The concept of weighting of character states is also introduced such that students are presented cases in which a specimen exhibits inconsistent signatures of sex (for example) and the various weights of the characters (based on previous validation studies) are

used to build a consensus beyond just taking a simple average. In addition, students are presented with standardized scoring scales and asked to interpolate between grades and extrapolate beyond the scale. The concept of mathematical seriation is also used for sex and age assessment exercises. Regression equations are used and demonstrated for stature estimation (module 12) based on long bones and the concept of a confidence interval is described. Finally, the module and lab on ancestry assessment (module 13, lab 10) uses multivariate output of real data and has students interpret those outputs and answer questions about the association of specific “races” with specific character states and evaluate the value of specific features for ancestry assessment.

**I.6 Includes weekly laboratory and/or field sessions that provide hands-on exposure to scientific phenomena and methodology in the discipline, and enhance the learning of course material.**

*Documentation: Syllabus pages 2-3; Labs 1-14*

*How Course Meets Spirit:* The course includes weekly lab exercises that are hands-on in their use of osteological materials to teach basic methodology and extrapolate the methodology to unknown cases.

*Specific Examples:*

Fifteen weekly lab exercises have been developed for the course. Each lab supplements what is presented in the lectures and provides students hands-on training with the methods presented in class. A key aspect of the lab exercises is the application of quantified and observational approaches in forensic anthropology with extrapolation of concepts beyond that which is taught directly. The titles and learning outcomes for each lab are presented in the syllabus. The learning outcome that runs throughout all of the labs is that of pattern observation and application of that pattern to an unknown example.

**I.7 Students submit written reports of laboratory experiments for constructive evaluation by the instructor.**

*Documentation: Syllabus page 5; Labs 1-15; Discussion board posts 1, 2, 3, 4*

*How Course Meets Spirit:* Uses written lab work, discussion board posting, and summary critiques to engage the students in a variety of written reports including submission of two hands on/applies labs that act as critical reviews and capstone exercises.

*Specific Examples:*

Weekly labs are submitted for grading by the instructor, which include a mix of objective questions as well as explanatory justification for why the answer was chosen. The latter is where the constructive evaluation is most effective. In addition, the unit-based discussion board posts are entirely written and consist of the students responding to a series of questions about a posted picture and explaining their reasoning. The most in depth writing assignment is for lab 15, the final lab of the course. In this lab students are assigned the task of critiquing an episode of true crime television that has a forensic anthropological component to it. During the course of this exercise students have to identify what is accurate and inaccurate about a portrayal of forensic sciences in the media. For inaccurate information they need to describe why. This capstone lab

takes all of the knowledge they learned from the semester and asks them to apply it in a critical and constructive context that not only makes them better citizens (by working against the CSI Effect) but provides them the skills needed to counter some of these inaccuracies as they move on into the adult lives. In other words, the combination of labs, discussion board posts, and media critiques provides students with the tools they need to be better citizens and passive educators, which has a multiplier effect in the populace.

**I.8 Course is general or introductory in nature, ordinarily at lower-division level; not a course with great depth or specificity.**

*Documentation: Syllabus (all modules); Textbook (see Byers table of contents): Labs 1-15*

*How Course Meets Spirit:* The course provides a brief overview of the full range of techniques used in forensic anthropology but does not teach complete competence in any one subject area. The topics include: recovery, forensic archaeology, determination of antiquity, determination of human status, human anatomy and osteology, determining post-mortem interval including use of the mortises, forensic entomology and taphonomy, assessment of sex, assessment of age, assessment of ancestry, stature reconstruction, the basics of bone trauma and healing, the types of trauma, ballistics and gunshot wounds, trauma physics, dismemberment taphonomy, fire taphonomy, animal taphonomy, positive identification, forensic odontology, DNA analysis, biohistory, human rights investigations, genocide, mass fatality recover, DMORTS, and career issues.

*Specific Examples:*

The course is general in scope and covers a broad range of topics within the forensic sciences. The course is designed to provide an overview of the various activities that a forensic death investigation entails, from body recovery, to generating a biological profile, to establishing cause and manner of death, to positive identification of the individual. These topics are also contextualized within broad surveys of their application in various types of research settings, from crime scene processing, to mass disaster recoveries, to human rights investigations. The course covers evolutionary theory, human anatomy, and the legal aspects of crime scene investigation.

**II.B Develops appreciation of the scope and reality of limitations in scientific capabilities.**

*Documentation: Syllabus (modules 6, 9, 10, 11, 12, 13, 19, 20, 21, 22, 23); Labs 4, 5, 6, 7, 8, 9, 10, 11, 12, 13)*

*How Course Meets Spirit:* Presents information on what cannot be learned from the human skeleton and consider error rates and limits of accuracy and precision, details the scientific progress and examples of old techniques that were determined too inaccurate to be used in forensic settings.

*Specific Examples:*

A key aspect of forensic anthropology is knowing the limits of what can and cannot be learned from analyses of the human body. Often the media presentation of forensic sciences overstates the value of evidence, thus “educating” the public about techniques in ways that are not true. Unfortunately, jurors take these misunderstandings with them to the courtroom (this has a name,

the CSI Effect). Throughout the course, lectures and labs emphasize the true limits of any particular methodology. For example, the lectures on biological profile (age, sex, ancestry, stature) discuss the accuracy AND precision of the techniques used to estimate these parameters. These concepts are reaffirmed in the labs (labs 5-10). In addition, the lectures discuss what cannot be ascertained from the human skeleton (the limitations) including weight, handedness, occupational specialization, and parity status. I note that these are all topics for which a literature DOES exist. In other words, scientists used to think such things were capable of being estimated from the skeleton but this is no longer the case, thus demonstrating through the history of the field the scientific process of testing and replication. Forensic is a field constantly in flux and its limitations are ever present through reports of false imprisonments and executions. This course provides context for understanding why these mistakes happen.

## **II.C Discusses costs (time, human, financial) and risks of scientific inquiry.**

*Documentation: Syllabus (modules 6, 24, 25)*

*How Course Meets Spirit:* Directly addresses the unrealistic expectations (unlimited resources, instant results) generated by the media about the role of forensic science in criminal proceedings.

*Specific Examples:*

The lectures in the beginning of the semester spend considerable time discussing the rules of evidence, standards of admissibility and the CSI Effect. With respect to rules of evidence the Daubert decision is most relevant because it provides guidance on establishing a scientific rather than expert basis for forensic techniques. Part of this discussion relates to the costs and feasibility of testing. In addition, the discussion of the CSI Effect directly targets criterion II.C. The CSI Effect, simply, is the effect seen in jurors' expectations of how the criminal investigation process works. Jurors expect results to be fast, reliable and universal. For example, jurors often wonder why DNA was not obtained and tested for nearly every piece of evidence, ignoring the costs and time frames involved. All of these issues are discussed in the first unit of the course. Several aspects of the risks of scientific inquiry are discussed in unit 4 under human rights investigations. An inherent risk of any forensic research is false imprisonment or other miscarriages of justice caused by the failure of the forensic investigation. Therefore, as a general science class the student is constantly reminded that the repercussions of mistakes are real. Real people are affected and there is no distance between the science and the application when it comes to forensic anthropology.

**Course Number:** ASM 275

**Course Title:** Forensic Anthropology

**Credits:** 4 Credit Hours

This class counts toward the CLAS Science and Society requirement as well as an SB general studies designation.

**Prerequisites:** None

**Faculty Name:** Christopher Stojanowski

**Office:** SHESC (ANTH) 310

**Phone:** (480) 727-0768

**Email address:** christopher.stojanowski@asu.edu

**Office hours:** Arranged via email

### **Course Overview**

This course will discuss the role of the forensic anthropologist and skeletal biologist in medico-legal investigations. We will focus on the types of information available through skeletal analysis that can aid in legal investigations. These include: human osteology and bone biology, techniques of forensic recovery, identification of victims through skeletal and dental analysis, and reconstructing trauma in crime scene analysis. The course will cover both the legal aspects of forensic practice as well as the underlying biological or evolutionary basis for the observations made on skeletons remains. Social theoretical aspects are incorporated through discussion of the meaning of human "racial" variation and the causes of ethnic-based warfare. Finally, we will consider historical forensic case studies and the contributions of forensic anthropology to mass disasters investigations and human rights violations including victims of torture, ethnic violence, and genocide. Ongoing efforts in the recovery of soldiers declared missing in action (MIA) during the 20th century will also be considered.

### **Learning Outcomes**

At the completion of this course, students will be able to:

- Visually identify the bones of the human skeleton and understand basic human anatomy
- Describe data scales, basic summary measures, the difference between accuracy and precision
- Understand the types of observer error and how it arises
- Understand the role of the forensic anthropologist in modern crime scene investigations
- Understand current standards of evidence as related to forensic analysis of human remains
- Be able to visually determine whether an individual was male or female and how old they were from the skeleton, as well as explain the biological processes underlying these differences
- Estimate the stature of an individual using regression equations.
- Describe the difference between biological and social race and understand the complexities of ancestry assessment in modern forensics
- Differentiate the major types of trauma and how each impacts the human skeleton
- Identify different types of postmortem body alterations, often done to cover evidence that a crime has been committed
- Appreciate the ways in which a positive identification can be obtained
- Understand the role of the forensic anthropologist in recreating activities at a crime scene.
- Define taphonomy as a general concept and as specifically applied in forensic settings
- Discuss the role of forensic anthropologists in mass disasters and human rights investigations

## Course Topics, Assignments, & Grading

### **COURSE GOALS**

The course curriculum is structured into four units each with a specific desired learning outcome. In general, the class is designed to briefly introduce forensic practice and provide guidance on the types of work available for forensic anthropologists. The four intellectual units are as follows:

**1) Human Osteology and Forensic Archaeology** – 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; the student will also learn basics of forensic recovery in the field. A critical component of this unit is a nuanced understanding of the role of the forensic anthropologist in medico-legal contexts.

**2) Baseline Individuation** - Students will learn the variety of ways in which the list of potential matches for an unknown decedent is limited based on assessment of sex, age-at-death, stature, and ancestral affiliation. A critical component of this unit is a nuanced understanding of the complexities of forensic ancestral affiliation assessment.

**3) Crime Scene Analysis, Trauma and Taphonomy** – The student will be able to identify whether a traumatic injury was pre-, peri- or post-mortem, whether the injury was caused by sharp force, blunt force, or projectile trauma, analyze characteristics of the weapon used, and reconstruct, where possible, the crime scene. The student will discuss the role of trauma analysis in human rights investigations.

**4) Positive Identification** – The student will be exposed to the myriad idiosyncratic ways that positive identification of a decedent can occur, from the standard DNA fingerprinting technology to medical and dental records comparisons and facial reconstruction. The student will be able to discuss the role of the forensic anthropologist in public outreach initiatives through discussion of biohistorical forensic consultations and articulation with the military through POW/MIA recovery efforts.

Activities used for instruction and assessment of learning include: online lectures; textbook and supplemental readings; videos and websites; online tests; and weekly laboratory exercises that include submitted written assignments.

### Laboratory Assignments and Learning Outcomes

#### **Lab 1 Introduction to Data Types and Descriptions**

- Learn the basic types of measurement scales used in forensic anthropology
- Learn the difference between metric and non-metric data
- Understand the relationship between measurement scales and quantification of patterns

#### **Lab 2 Accuracy, Precision and Observer Error**

- Consider the *Daubert* ruling with respect to forensic anthropology's role in the legal setting
- Understand the difference between accuracy and precision
- Understand what reduces accuracy and precision and how to prevent it
- Understand the different types of observer error
- Provide examples of inter- and intra-observer error
- Introduce the concept of metadata

#### **Lab 3 Human Anatomy and Osteology**

- Understand basic anatomical terminology
- Learn the major bones of the human body and be able to identify them visually
- Understand the sources of variation in the human skeleton
- Applying whole bone osteology to fragmentary remains

#### **Lab 4 Establishing the Post-mortem Interval**

- Introduce the concept of post-mortem interval
- Understand and apply the principles associated with rigor mortis, algor mortis, and livor mortis
- Define forensic entomology and apply its principles for estimating post-mortem interval



- Use insect succession and blow fly life cycle data to estimate post-mortem interval
- Introduce the concept of bracketing using multiple indicators of post-mortem interval

#### **Lab 5 Methodology of Sex Assessment from the Skull**

- Learn the anatomy of the human skull
- Learn how to assess the sex of an individual from the cranium using visual criteria
- Apply ordinal data standards to a forensic problem
- Understand the range of human variation
- Apply trait weighting standards to more ambiguous cases

#### **Lab 6 Methodology of Sex Assessment from the Pelvis**

- Learn the anatomy of the human pelvis
- Learn how to assess the sex of an individual from the pelvis using visual criteria
- Apply ordinal data standards to a forensic problem
- Understand the range of human variation
- Apply trait weighting standards to more ambiguous cases

#### **Lab 7 Sexual Dimorphism and Quantitative Sex Assessment**

- Learn the definition of sexual dimorphism and its evolutionary basis in humans
- Understand the relationship between the mean and standard deviation of a measurement and its ability to differentiate the sexes
- Apply these principles to hypothetical examples from forensic contexts

#### **Lab 8 Growth, Development and Subadult Age Estimation**

- Learn the basics of age estimation using subadult criteria
- Learn the basics of tooth anatomy, development, and eruption
- Learn how to read charts of standard measurements and observations
- Apply aging standards to real world examples
- Understand the concept of seriation or ordering of observations and the value of comparison

#### **Lab 9 Joint Decay and Adult Age Estimation**

- Understand the anatomical basis for adult age estimation
- Apply the concept of seriation to pubic symphysis age estimation
- Evaluate cranial suture closure as an indicator of age estimation

#### **Lab 10 Biological and Social Race – Forensic Challenges**

- Understand the difference between biological and social race within a forensics context
- Identify and use key features anthropologists employ to identify social race
- Understand and interpret multivariate plots
- Use pattern recognition as an analytical technique

#### **Lab 11 The Basics of Trauma Interpretation**

- Learn the basic description of trauma, including the definition of trauma as applied within forensic contexts
- Learn the three timeframes in which trauma could have occurred
- Learn how to differentiate peri-, ante-, and postmortem trauma using skeletal indicators

#### **Lab 12 Assessing Blunt Force, Sharp Force, and Projectile Trauma**

- Learn the different types of external forces that can act on bone and differentiate the types of fracture patterns that result from each
- Identify blunt force trauma
- Identify sharp force trauma
- Identify projectile trauma
- Learn to identify bullet entry and exit wounds

#### **Lab 13 Forensic Taphonomy**

- Understand the field of taphonomy and how it applies to forensic anthropology

- Understand the mechanics of saw marks on bone and how to identify signatures of different types of saws based on cut mark properties
- Learn the terms kerf, kerf wall, false start kerf, striae, and breakaway spur in relationship to cutmark analysis
- Understand the basic differences between hand and power saws
- Identify and differentiate carnivore and rodent marks on bone
- Identify the signatures of fire on bone and how the temperature of the fire can be assessed
- Understand the process of bone weathering

**Lab 14 Capstone: Putting it all Together**

- This lab presents a capstone project that has you identify fragmentary human remains, estimate the minimum number of individuals, and apply information learned throughout the semester about sex, age, ancestry, stature, and trauma.
- The goal here is to apply what you have learned to a situation slightly more advanced than previously encountered.

**Lab 15 The CSI Effect and the Critique of Forensics in the Media**

- Apply the knowledge you have learned in the class to a critique of popular media's perception of the forensic investigation, in particular the CSI Effect
- Learn how to summarize scientific method presentation
- Learn how to critique the presentation of methodology in the specific sense of application or misunderstanding of the nuance of a particular method.

## **COURSE REQUIREMENTS:**

The course grade will be based on the average of four unit exams, five discussion boards, and 15 weekly lab assignments. **Each exam counts for 10% of your final grade (40% total), the discussion board counts for 10% in total), the weekly lab assignments count for 50% of your grade.**

Exams: There are four unit exams and none will be dropped. Exams will be objective in scope and include multiple choice and true/false questions based on the material covered in each section. There will also be a visual section to each exam that requires students to identify or interpret a series of images. Although each unit exam is not technically comprehensive, the course does build on previous work, and in this sense there is some continuity and overlap throughout the semester.

- Each exam will consist of thirty randomly selected questions from a test bank. Each student will have 35 minutes to complete the exam. You should study for each exam as if this were an in class exam. Exams are closed book and closed note and it is expected that you will not be using any sources to look up answers. Please note, there is no time for this anyway since you have a little more than 1 minute to answer each question.
- Please note the date for each exam. The exam will be available from 12:00 am to 11:59 pm on exam dates. You may not take the exam before or after the exam date.
- Exams MUST be taken in order and each exam will have a due date listed on the course calendar below. There are no makeup exams given and no exam extensions unless you have made arrangements BEFORE the due date with the instructor.
- Grades will be automatically entered into the Blackboard Gradebook.
- Be sure to complete all modules within each unit before taking the exam for that unit.

Discussion Board: Each unit you will be required to write a discussion post that responds to an article or question(s). Postings will be administered on the Blackboard website for the course. Each post should be 200-400 words long. There are a total of five discussion posts, four of which are the unit posts and one "Self Introduction" post. You are encouraged to read and respond to the posts of your group members.

Lab Exercises: There are 15 weekly labs for this class that have between 15-20 written questions. These questions are submitted for grading. The labs are designed to supplement what is presented in the class lectures and involve hands on exercises in the methodology of forensic anthropology. Labs must be completed individually; group work is not appropriate.

## **GRADING SCALE:**

A	90-100	Excellent
B	80-89.9	Good
C	70-79.9	Average
D	60-69.9	Passing
E	<60	Failure
XE		Failure due to Academic Dishonesty

**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>).

## **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>.

### **Email and Internet**

ASU email is an [official means of communication](#) among students, faculty, and staff. Students are expected to read and act upon email in a timely fashion. 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.

### **Submitting Assignments**

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

### **Drop and Add Dates/Withdrawals**

This course adheres to a compressed schedule and may be part of a sequenced program, therefore, there is a limited timeline to [drop or add the course](#). Consult with your advisor and notify your instructor to add or drop this course. If you are considering a withdrawal, review the following ASU policies: [Withdrawal from Classes](#), [Medical/Compassionate Withdrawal](#), and a [Grade of Incomplete](#).

### **Grade Appeals**

Grade disputes must first be addressed by discussing the situation with the instructor. If the dispute is not resolved with the instructor, the student may appeal to the department chair per the [University Policy for Student Appeal Procedures on Grades](#).

### **Student Conduct and 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>. Additionally, 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.

### **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.

## Computer Requirements

This course requires a computer with Internet access and the following: Web browsers ([Chrome](#) only)[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, create a study and/or assignment schedule to stay on track

## 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.

- 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 cours(es) 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 ACTIVITIES

	Topic	Byers Chapter	Additional Media	Labs
<b>UNIT 1: Basic anatomy and forensic archaeology</b>				
1	Introduction to the course			1
2	The goals of forensic anthropology	1	Davis and Halla-Borrelli 2008; Kathy Reichs video	2
3	Basic bone biology	2		3
4	Human osteology and anatomy	2		3
5	Establishing the forensic context: bone, human vs non-human	3	Ubelaker et al. 1991	4
6	Establishing the forensic context: medico-legal relevance	3		4
7	Forensic archaeology	4	Obledo 2009	4
8	Establishing time since death	5	Coyle et al. 2005; The Body Farm, Pig Decomposition, and Forensic Entomology Videos	4
<b>DISCUSSION BOARD 1 – due by 11:59pm on Friday, July 10<sup>th</sup>.</b>				
<b>TEST 1 – Basic Anatomy, Archaeological Recovery (modules 1-8)</b>				
<b>UNIT 2: Baseline Individuation</b>				
9	Estimating the sex of skeletons	8		5-7
10	Determining the age of subadult remains	9		8
11	Determining the age of adult remains	9		9
12	Stature estimation	10		
13	Assessing population affinity	7		10
<b>DISCUSSION BOARD 2 – due by 11:59pm on Wednesday, July 22nd.</b>				
<b>TEST 2 – Assessing Basic Identification (modules 9 - 13)</b>				
<b>UNIT 3: Crime scene analysis, trauma, and taphonomy</b>				
14	Manner of death- Basic trauma principles, bone healing process	11		11
15	Manner of death- Projectile trauma	12	Muzzle blast video	12
16	Manner of death- Blunt force trauma	13	Ta'ala et al. 2006; Bill Bass video	12
17	Manner of death- Sharp force trauma	14		12
18	Taphonomy - Intentional mutilations, pseudo-pathology	16	Morton 2006; Allaire and Manheim 2008; West Memphis Three videos	13
<b>DISCUSSION BOARD 3 – due by 11:59pm on Friday, July 31st.</b>				
<b>TEST 3 – Manner of Death and Taphonomy (modules 14 - 18)</b>				
<b>UNIT 4: Making a Positive Identification</b>				
19	Individuation – Pathology and disease history	15		14
20	Individuation – Occupational stress markers	15		14
21	Individuation -Addt'l aspects of	17		

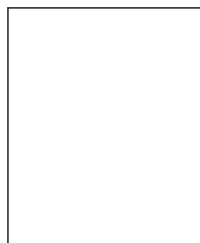
individuation			
22	Forensic odontology	17	Rothwell 1995; Forensic odontology and bitemark analysis videos
23	Facial reconstruction	18	Hellmer 1987; Forensic reconstruction video
24	Human rights investigations	19	Ubelaker et al. 1995; Park et al. 2009; Fulginetti 2008; Mayan genocide video
25	Historical case studies	19	Stojanowski and Duncan 2009; Colonial Chesapeake video
<b>DISCUSSION BOARD 4 – due by 11:59pm on Tuesday, August 11th.</b>			
<b>TEST 4 – Aspects of Individuation (modules 19 – 25)</b>			



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Anthropology / Forensic Anthropology / Forensic Anthropology Laboratory Manual, 3/E



# Forensic Anthropology Laboratory Manual, 3/E

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- 2.) COMPREHENSIVE

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- Chapter 3: Establishing the Forensic Context
- Chapter 4: Recovery Scene Methods
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- Chapter 7: Attribution of Ancestry
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Expected Outcomes

Minimum Materials

Optional Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Note to Instructors

Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Note to Instructors

Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Expected Outcomes

Minimum Materials

Optional Materials

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Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

Subadults

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Note to Instructors

Exercise Worksheets

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Note to Instructors

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Minimum Materials

Optional Materials

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Expected Outcomes

Minimum Materials

Optional Materials

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Minimum Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

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Learning Objectives

Expected Outcomes

Minimum Materials

Optional Materials

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Note to Instructors

Exercise Worksheets

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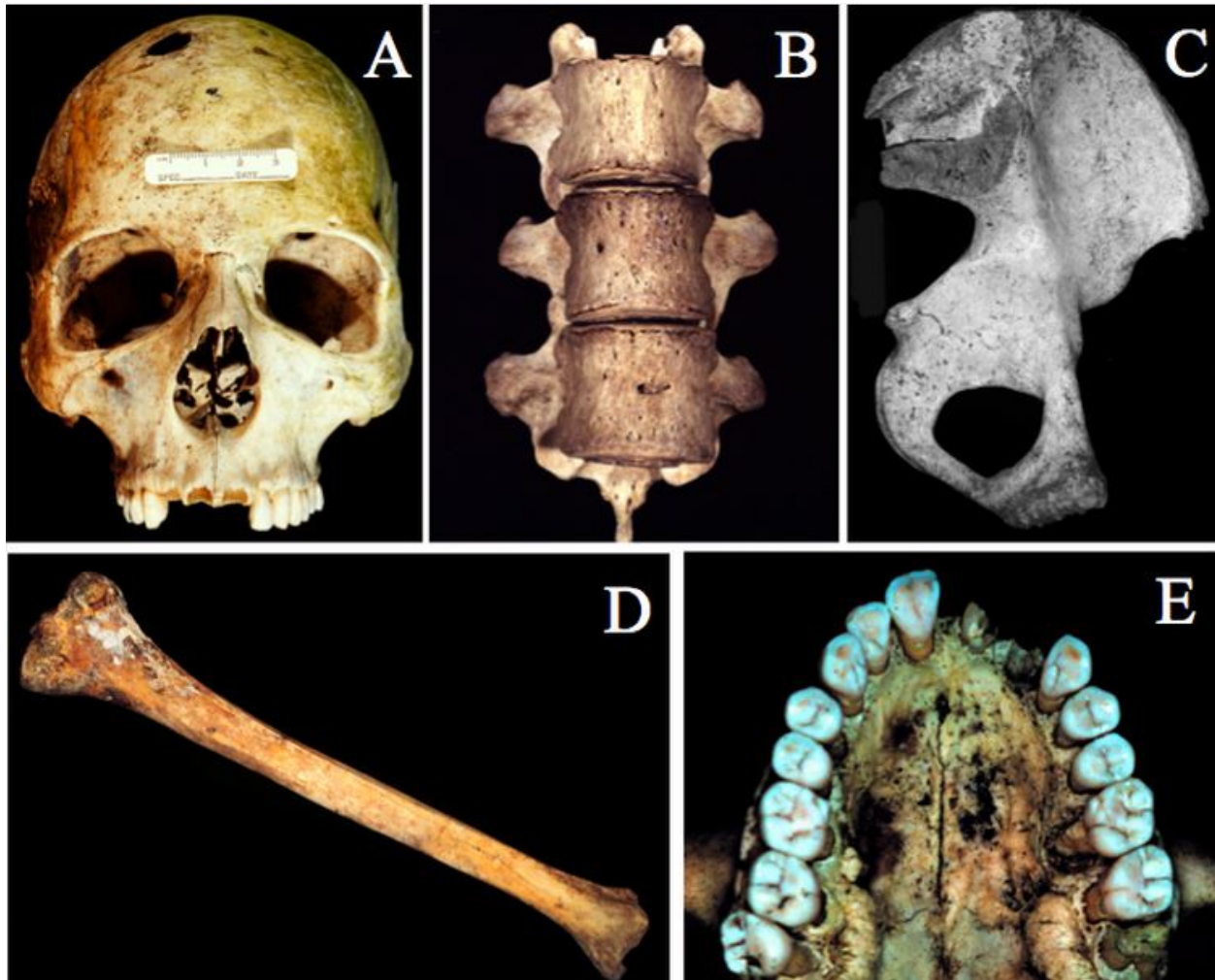


Based on what you have learned in unit 1 consider the following scenario.

One day you receive a phone call from a local law enforcement officer who has responded to reports of human remains being discovered in someone's back yard. They tell you the remains look pretty beat up and there isn't much to see as far as they are concerned. They ask whether they should just dig up what's left to bring to your office. How do you respond?

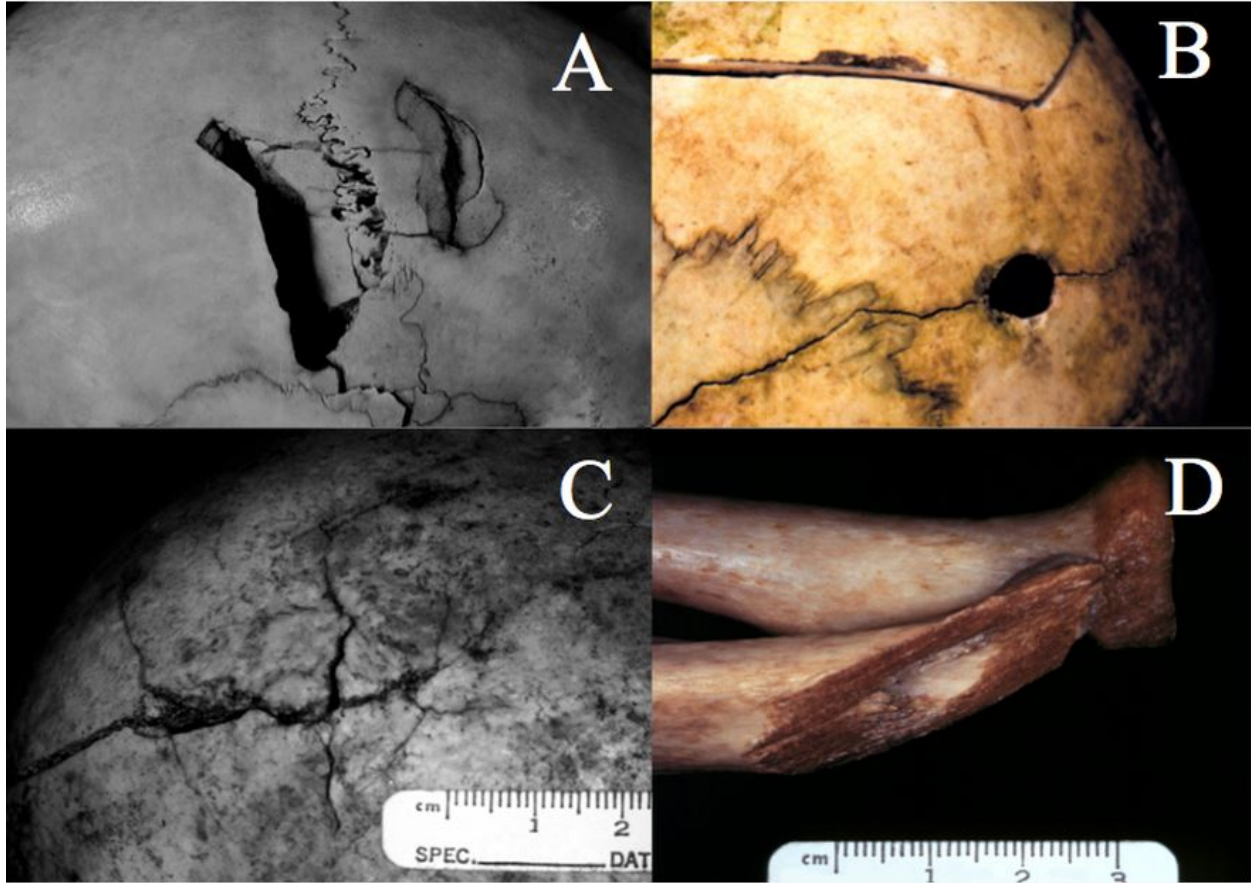
They also note the man who lives in the house denies any wrongdoing saying that the bones are left over from a pig roast but the police officers don't believe him. How would you go about differentiating human from pig bone? Please consider any tests that you would conduct as well as describing the features of human long bones.





Please study the photographs above and answer the following questions. Include the letter of the image and identify the bone in your response.

- 1) Given the choice of elements included in the above image, which is the best choice for you use to assess the SEX of the individual and why? What traits/features would you look for?
- 2) Given the choice of elements included in the above image, which is the best choice for you use to assess the AGE of the individual? What traits/features would you look for?
- 3) Given the choice of elements included in the above image, which is the best choice for you use to assess the RACE of the individual? What traits/features would you look for?



Please study the photographs above and answer the following questions.

1. From Photo A, is this wound/trauma antemortem, perimortem, or postmortem? Why?
2. From Photo B, is this an entrance or exit wound? Why?
3. From Photo C, what type of fracture is this? How can you tell?
4. From Photo D, the forensic anthropologist thinks this is a sharp force trauma from a simple knife. Do you agree or disagree? Why? If you disagree, try to identify the weapon.

Post should be 200-400 words.



Imagine you find a clandestine grave with only a single human tooth in it. Using all of the information we have learned this semester please describe the uses of forensic dentistry in crime scene investigation. The tooth is a premolar (bicuspid) with a complete root. How would you verify the age of the tooth (of medico-legal relevance or not), the sex of the individual and the age of the individual. Is there a possible indicator of the person's ancestral background? How might one use this tooth for positive identification?