Forensic Anthropology (ANTH 458)

**STUDY GUIDE FOR FINAL EXAM**

**Final Practical: December 9, 2010: 1:30-2:25 PM**

Preparation for lab practical: Review Labs 2-9 and the assigned reading from the Byers’ textbook and lab manual and other assigned reading.

**Review the following:**
- animal vs. human remains, old vs. recent, etc.
- how to determine ancestry using morphological (non-metrical) features observed in skulls
- how to determine sex using a pelvic, a single os coxae, or single pubic bone
- how to determine sex using from skulls and infracranial remains
- how to determine age-at-death using dental and skeletal remains of adults
- scars of parturition and pre-auricular sulci look like and what they indicate
- how to determine stature from complete and incomplete long limb bone bones. Know how to measure the lengths of various long limb bones and which formulae to use [actual formulae will be provided]
- what is included in writing a forensic anthropology report?
- identification of trauma in human skeletal remains

**Written Exam: December 14: 12-2 PM**

Preparation for written portion of exam: Review all assigned reading since the mid-term exam.

Exam format: A choice (maybe) of short answer, definitions, and short essay

**Topics to be covered:** Stature, trauma, antemortem and postmortem changes in the skeleton, positive identification individuation, radiographic techniques, facial reconstruction, forensic odontology, ethics, expert witness, human rights, and report writing,

**PRINT OR WRITE CLEARLY AND USE PEN OR DARK PENCIL.**
Definitions:
Trotter (1970)           postmortem           septal aperture
Fully's method          antemortem           kerf
Steele's method         chain of custody     Jeffrey Dahmer
Sjøvold's method        parturition pits     Ted Bundy
Carabelli's cusp         bite wing radiographs likelihood ratio
Gustafson's method       individuation         calcined bone
shovel-shaped incisors   amalgam              canids
“civilized” teeth        sella turcica        PHR
rugoscopy                Clyde Snow           death masks
FDI                      regression formulae STR
subpoena                 cause of death        minisatellites
corpus delicti           manner of death       pink teeth
Diplomat in ABFA         comminuted fracture  Hyoid
squatting facet          green stick fracture Argentine Forensic Team
occupational markers      porotic hyperostosis JPAC-MIA lab
superimposition techniques Schmorl’s nodes Butterfly fracture
antemortem/postmortem    kyphosis              Concentric fracture
match                    wormian bones         Teacup fracture
maceration               metopism              Bushmen canine
Mohan ruling             Os japonicum         Oscar Amoedo
Daubert factors          spondylolysis        Pizarro
frontal sinus pattern    foramen of Huschke bite mark analysis
handedness               spina bifida
perimortem               osteophytosis

Short Answer [Some Examples of Questions for the Written Portion of the Exam [Some of these are actual questions that have appeared on previous ABFA exams,]

1. In your opinion, what is the best method for estimating the living stature of a) a complete skeleton, b) a fragmented skeleton? Upon what sources would you rely in making your estimation? How accurate should such an estimate be? [Source: ABFA Exam, New Orleans, 2/11/86].

2. You have determined the stature of a 40-45 year old male, Negro individual from fragmentary bones. Describe this process including the methodology, procedures, and error. [Source: ABFA Exam, San Diego, 2/17/87].

3. In submitting your final report of examination, what should you include in it? [Source: ABFA Exam, San Diego, 2/17/87].

4. On the witness stand, you say Mr. X was about 5'8" tall in life. In cross examination you are asked, "How did you determine this, and how accurate is your finding?" Answer this in simple, clear language in reply to your interrogator. [Source: ABFA Exam, San Diego, 2/17/87].

5. Describe how one should proceed if asked to reconstruct the facial features on a skull in the most scientific manner. [Source: ABFA Exam, San Diego, 2/17/87].

6. What is meant by traits of individuation? Give some examples that apply to forensic anthropology.

7. What is meant by occupational stress markers in the skeleton? Give at least two examples and explain the relationship between structure and function for each.

8. Describe one case study from the literature that illustrates how a forensic anthropologist was helpful in providing a positive i.d. from skeletal remains.

9. How do forensic anthropologists determine handedness and body weight using only skeletal remains?

10. What is involved in making a dental i.d.? What are the basic assumptions? What are the methods used to make a dental i.d.?

11. The following series of bones are presented for stature estimation: skull, all vertebrae, humerus, ulna,
tibia, femur, and the bones of the left foot. What is the best method for determining stature from this assemblage? Why?
10. How can a forensic odontologist assist in child abuse cases?
11. What is meant by the term "chain of custody" or "chain of possession of the evidence"? Why is it important in forensic investigations? [Source: ABFA Exam, New Orleans, 2/11/86].
12. Briefly discuss the three main methods that are used in the positive identification of human skeletal/dental remains. Which is the least accurate and why?
13. What are the components of the frontal sinuses that are used to obtain a positive identification? Considering the information presented on maxillary, ethmoid, and mastoid sinuses, could a similar system be developed for these structures? Should such a system be developed and why?
14. In forensic odontology, the characteristic most often considered as conclusive proof of identity is the configuration of the tooth amalgams. Discuss why this is so and why general observations on the placement and number of fillings might not necessarily lead to a positive identification. What can a forensic anthropologist contribute to a forensic dental examination?
15. How do forensic anthropologists (scientists) use antemortem and postmortem evidence in establishing a positive identification? Provide examples.
16. An intact skull is discovered that is determined to be a Black male between 20 and 40 years of age. If a missing person matching that description was once treated for a head injury at the local hospital, what steps should be taken to obtain a positive identification?
17. If radiographs of the side of the head of a person, and bitewings from the local dentist are available, how could a positive identification be achieved?
18. Discuss the role (purpose, limitations etc.) of facial reconstruction in forensic anthropology. What are the main techniques available for making facial reconstructions?
19. Considering the validity in the tissue depths used in developing facial reproductions, is it reasonable that this technique is not accepted as a form of positive identification by the legal community? Support your answer.
20. If a skeleton was found without a scapula and the bones of the right side were larger (both in thickness and in length) that the left, would it be reasonable to state that the person was right-handed and why?
21. Outline the various categories of dental evidence that are useful for identification purposes.
22. How can damage to bone due to blunt force trauma be distinguished from that caused by sharp and projective trauma?
23. Contrast antemortem, perimortem, and postmortem injury to bone. Why is it important to distinguish when the damage occurred?
24. How would you determine the entrance and exit opening in a skull caused by projectile trauma?
25. What are the different categories of postmortem change in bone most often encountered in forensic anthropology?
26. Contrast manner of death and cause of death. How can a forensic anthropologist assist a medical examiner in determining both when the evidence is from human skeletal remains? Give examples of each.
27. Discuss how DNA analysis assists forensic scientist in the identification of fleshed as well as skeletalized remains.
28. What are the major principles of ethics that guide forensic investigation? Elaborate.
29. Although courtroom appearances are not common, forensic anthropologists must be aware of the steps involved in offering expert testimony in a court of law. What are the steps they should follow when giving testimony in a court of law?
30. What are the differences between evidence and opinion, as well as levels of certainty when a forensic anthropologist offers an opinion?
31. Dismemberment is one of the most common forms of human-caused postmortem changes to the skeleton. What are the major features of dismemberments that should be assessed in bone?
32. A skeleton is found lying on railroad tracks with multiple traumas. All long bones, the ribs, and most short bones exhibit simple and comminuted fractures. The skull is smashed and the pelvis
broken in several places. Describe as many causes and manners of death that you can think of that would result in these types of injuries.

33. There are a number of pathological conditions, anomalies, and markers of occupational stress appearing in the human skeleton that might be mistaken for perimortem trauma and postmortem (taphonomic) damage or that could be used to support an identification of deceased persons. Give examples of all three categories.

34. A skull exhibits a round entrance wound to the left temporal and an outwardly beveled exit wound to the right temporal. No fracture lines emanate from the entrance wound, but several large lines radiate from the exit wound. Hypothesize as to the placement and type of weapon used to cause these injuries.

35. Contrast antemortem, perimortem, and postmortem bone trauma. What are the signature characteristics of each? Why is important to distinguish between these three types of trauma in forensic work?

36. Define forensic taphonomy. Why is taphonomy important in forensic investigations? What are some examples of the taphonomic features which are investigated in these studies.

37. How can you tell, using only skeletal remains, if someone died by strangulation? What are the indicators. Cite an actual example from the literature.

38. Define what is meant by "chain of custody". Why is this principle important to forensic investigation? What can occur if the chain is broken? Cite a case study where this principle was of paramount importance.

39. What are the classic morphological signatures observed in bone for determining if the remains were fleshed or defleshed at the time of exposure to heat/fire?

Comprehensive (Essay)

1. The preferred type of identification is a "positive ID". Can the positive ID ever be made from skeletal material alone? Explain your response. If a positive ID cannot be made, are there lower levels of identification? What are they, and how may they be achieved? In point of fact, does an anthropologist ever make an ID? (Source: ABFA Exam, New Orleans, 2/11/86).

2. What is meant by "expert witness in forensic anthropology"? What specific qualifications are needed? What are expert witnesses called upon to do? Where can you find one if you need one? You are asked to appear in court as an expert witness. What special procedures and/or rules of conduct should you follow in performing this role and what should you expect to take place prior to and during your testimony? Should you receive a fee for this service?

3. Define what the field of forensic odontology is? What does it include? What is the basis for the science? What specialized training is necessary? What methods are used and what is its relationship to forensic anthropology (i.e. is there one, and if so, how can they interact)?

4. What is meant by traits of individuation? What is meant by positive identification? Briefly discuss the three main methods that are used in the positive identification of human skeletal/dental remains. Which is the least accurate and why? What kinds of evidence are acceptable (in courts of law) as for making a positive i.d.? Can a positive ID ever be made by a forensic anthropologist using skeletal remains alone? Explain your answer and provide example(s) from the literature.

5. How do forensic anthropologists estimate living stature from skeletal remains? Which methods provide the most accurate results and how should these be reported? What are some of the major limitations of using these methods? How can stature be estimated from incomplete long limb bones? Can body weight and handedness ever be determined from skeletal remains? How?
6. What is the appearance of burned human skeletal remains? How can you determine if the remains were dry or fleshed when they were burned? Is it possible to completely consume a body by fire? What typically remains after the body has been burned? What are some of the special methods for dealing with burned/cremated remains? Provide an example from the literature.

7. Discuss the role, purpose, and limitations etc. of the principal methods of facial reconstructions in forensic anthropology. Considering the validity of the tissue depths used in developing facial reproductions, is it reasonable that this technique is not accepted as a form of positive identification by the legal community? Support your answer. What are the steps involved in making a facial reconstruction?

8. What is meant by "expert witness in forensic anthropology"? What specific qualifications are needed? What are expert witnesses called upon to do? Where can you find one if you need one? What special procedures and/or rules of conduct should you follow in performing this role and what should you expect to take place prior to and during your testimony? What is the difference between evidence and opinion in providing courtroom testimony? Elaborate.

8. Discuss the uses of DNA analysis in a) the forensic sciences and b) forensic anthropology. What is the theoretical/methodological basis for these studies and what are the specific applications in cases involving skeletal remains? Provide some examples taken from the literature. What are the pros and cons of DNA analysis?

9. Outline the major components of a final written report that summarizes a forensic anthropological investigation of a nearly complete set of human skeletal remains that you have been given to examine. What do you include in your report and how should you present this information?

10. The analysis of trauma in bone is one of the most important sources of evidence for determining the cause and manner of death. Name the three types of trauma that are frequently encountered in forensic anthropology. How can damage to bone be distinguished among these three types of trauma? Provide an example(s) from the assigned reading to support your answer.