Zooarchaeology is the study of human relationship with animals through the analysis of animal bones from archaeological sites. This course provides an introduction to the use of animal bones in archaeological research and focuses on bird and fish bones. Students will gain hands-on experience identifying bird and fish bones and will learn major theoretical and methodological issues in the use of animal bones as a source of information about prehistoric societies.

The course will be made up of lecture and laboratory sessions. Topics to be covered include:

- basic identification and recording of bird and fish bones concentrating on taxa from the Midwestern United States. Lectures will cover evolutionary trends, taphonomic perspectives, problems and methods of quantification and determination of seasonality, recognition of human from non-human deposition/damage of bones, hunting strategies, among others.

- there will be quizzes covering bone identifications and to a lesser extent the assigned readings.

- students will be required to compile a laboratory notebook (a 3-ring loose-leaf is required) of annotated drawings of animal bones covered in the class. Students must hand draw the bones being studied, but because of limitations on access to the lab to complete the drawings, with the permission of the instructor, drawings may be supplemented with those taken from osteological manuals, pictures taken with personal cameras, and/or taken from reputable internet sites. Drawings must include key characteristics used in identification of taxa. The notebook should also be supplemented with pertinent references and additional information regarding the identification of the studied taxonomic groups. Class notes, key-assigned readings, worksheets, and other class related papers should also be included. The goal of this requirement is to provide a useful resource that will aid in future field study of animal bones. It is very important to work on the notebooks as the course progresses. Notebooks are due at the time of the final exam and no late notebooks will be accepted.

- students may have the opportunity to process a fish and a bird for their bones as a class activity depending upon the availability of fish and birds to process as well as the processing facility. This exercise is to help students visualize and learn first hand how each type of skeleton is articulated. It is often difficult to conceptualize a whole skeleton (particularly that of a fish) when working with fragmentary archaeological specimens. This project may be worked on in pairs depending on how many are in the class. This also provides a view of
what some may believe to be the “down-side” of zooarchaeology - preparation of an osteological comparative collection. This is not a mandatory activity and a student’s grade will in no way be affected if they choose not to participate.

• graduate students and students in the accelerated University College program will be required to prepare a paper (around 7-10 pages) on the an aspect of zooarchaeological research that relates to birds or fish. You should include the amount of work that has been done in the area of research you choose, as well as major gaps that exist, and the direction of future research. (Undergrads may also do a shorter paper for extra credit – see grading below).

• Grading: Please note that plagiarism, copying from other students, and other forms of cheating will not be tolerated. Violations of standard rules of academic integrity will be reported to the Dean and may lead to disciplinary action, which could result in expulsion from the University.

Quizzes: 70%;
Notebook: 20%
In-class activity: 5%
Class attendance: 5% (see note below)
Papers: 20% (students writing papers for credit will be graded on a 120 point scale)
Extra credit work: no more than 5%

PRELIMINARY COURSE OUTLINE: Subject to change

PLEASE NOTE: It is very important to attend every class because it will be very difficult to make up a class due to the hands-on nature of the course. Time will be given for drawing of bones during some of the class periods. However, additional time in the lab outside of regular class time may be necessary and will have to be arranged with the instructor. The instructor should be notified before class if a student will be absent.

Readings other than those from the required texts may be obtained on Blackboard in the Course Documents section. See note below regarding the readings before you print them out.

Week 1. January 13
  Introduction to Zooarchaeology and course orientation; introduction to avian evolution and avian skeletal terminology
  Readings: Reitz and Wing 2008, chps. 1, 2, 3 (to pg. 44); Serjeantson 2009, chps. 1-2; Driver 1992; Gobalet 2001; Bochenski 2008

Week 2. January 20
  Continue avian skeletal terminology; introduction to Avian axial osteology; seasonality
  Readings: Continue readings from Week 1; Van Neer et al. 2002; Serjeantson 2009, chap. 3 to pg. 53, 256-259.
Week 3. January 27
  Introduction to Avian appendicular osteology; bird taphonomy.

Week 4. February 3
  Introduction to miscellaneous avian elements; measurement of bird bones, bird
  domestication Review for 1st Quiz
  Readings: Serjeantson 2009, chps. 11 & 12; [Von den Driesch 1976, pp. 103-129
  (reference only)]

Week 5. February 10
  1st QUIZ - Bird axial and appendicular Osteology (15%). Class time after the quiz may be
  used of catching up on notebook drawings.

Week 6. February 17
  PAPER TOPICS DUE. Introduction to fish evolution and skeletal terminology; begin
  introduction to bones of the neurocranium; discussion of recovery techniques.

Week 7. February 24
  Finish introduction to bones of the neurocranium and jaws; fish taphonomy. Possible fish
  maceration.
  Readings: Jones 1986; Lyman 1994, pp 434-445; Willis et al. 2008; Wheeler & Jones 1989,
  Chp. 5
  Readings on Maceration: Holden 1914; Baker et al. 2003; Greenfield and Freer 2002;
  Davis and Payne 1990

Week 8. March 3
  Introduction to bones of the gill covers and hyoid area; fish measurement, determination of
  seasonality. Review for Quiz 2 and lab time. Finish maceration if necessary.
  Readings: Wheeler & Jones 1989, Chp. 9

Week 9. March 10
  NO CLASS – SPRING BREAK

Week 10. March 17
  Quiz 2 – Bird Osteology and Fish Osteology studied to date (15%).
  Lab time.
  Readings: Morey 1983; Wheeler & Jones, Chp. 11

Week 11. March 24
  Introduction to bones of the pectoral girdle and other miscellaneous bones;
  recording of data.
  Readings: Reitz and Wing 2008, Chapter 6; Wheeler and Jones 1989, Chp. 8
Week 12. March 31
Catch-up week – lab time, review for 3rd Quiz.

Week 13. April 7
**3rd QUIZ: fish osteology with some bird osteology as extra-credit (15%).**

Week 14. April 14
Quantification of faunal data with in-class activity (5%); Lab time.
**Readings**: Lyman 1994, Chp. 4, pp 97-113; Reitz & Wing 2008, Chp. 6 (continued);
Wheeler & Jones 1989, Chp. 10

Week 15. April 21
Review for Final Exam; finish notebook drawings. **PAPERS DUE** (20% for grad students; 5% extra credit for undergrads), short presentation given by those who wrote papers.

Week 16. April 28
**FINAL EXAM (25%)** covering total semester and **NOTEBOOKS DUE (20%).**

**READINGS**

**Required Books for class:**
Serjeantson, Dale

Wheeler, Alwyne and Andrew G. Jones

The following are readings that may be on quizzes, but information contained in them will be covered in lectures. Some of the readings are technical and not “easy” reads, but would like them to be read or scanned to give students a feel for the zooarchaeological literature. All the readings are on Blackboard in the Course Document section.

Baker, P. S. Davis, S. Payne, and M. Revill

Bochenski, Zbigniew M.

Davis, Simon and Sebastian Payne

Driver, J. C.
Gobalet, Kenneth W.

Greenfield, H. J., and S. Freer

Holden, F. Harvey

Jones, Andrew K. G.

Lyman, R. Lee

Morey, Darcy F.

Reitz, Elizabeth and Elizabeth Wing

Willis, Lauren M., Metin I. Eren, and Torben C. Rick

Van Neer, William, Katrien Noyen, Bea De Cupere, and Ingrid Beuls

**ADDITIONAL BIRD AND FISH OSTEOLOGY REFERENCES**

Most of the following texts and articles are available on Blackboard and may be used as references. A few may be in the classroom.

Baumel, Julian J., Anthony S. King, James E. Brazile, Howard E. Evans, and James C. Vanden Berge
Branson, Branley A.  
1962  Comparative Cephalic and Appendicular Osteology of the Fish Family.  
Catostomidae. Part I, *Cycleptus Elongatus* (LeSueur).  *The Southwestern Naturalist*  
7(2):81-153.

Cailliet, Gregor M., Milton S. Love, and Alfred W. Ebeling  
1986  *Fishes. A Field and Laboratory Manual on their Structure, Identification, and Natural History.*  
Wadsworth Publishing Company, Belmont, California.

Cannon, Debbi Yee  
Department of Archaeology, Simon Fraser University, Archaeology Press, Publication No. 18.  
Burnaby, B.C.

Casteel, Richard W.  
1976  *Fish Remains in Archaeology and Paleo-environmental Studies.*  

Cohen, Alan, and Dale Serjeantson  

Daniels, Robert A.  
New York State Museum Bulletin Number 488.  
The University of the State of New York, Albany.

Davis, Simon  
1987  *The Archaeology of Animals.*  
Yale University Press, New Haven.

Gilbert, B. Miles, Larry D. Martin, and Howard G. Savage  
1981  *Avian Osteology.*  
B. Miles Gilbert, publisher.  
Laramie, WY.

Gregory, William K.  
Originally published in the Transactions of the American Philosophical Society 23(2), 1933.

Hargrave, Lyndon L.  
1972  *Comparative Osteology of the Chicken and American Grouse.*  
Studies in Biology No 1, Prescott College, Prescott, AZ.

Hesse, Brian and Paula Wapnish  
1985  *Animal Bone Archaeology.*  
Taraxacum, Inc.  
Washington, D. C.
Klein, Richard and Kathryn Cruz Uribe  

Koch, Tankred  

Krause, J. D.  

Lepiksaar, Johannes  

Lyman, R. Lee  

Morales, Arturo and Knud Rosenlund  
1979  *Fish Bone Measurements. An Attempt to Standardize the Measuring of Fish Bones from Archaeological Sites*. Steenstrupia, Copenhagen.

Mundell, Raymond L.  
1975  *An Illustrated Osteology of the Channel Catfish (Ictalurus punctatus)*. National Park Service, Midwest Archeological Center, Lincoln, Nebraska.

O’Connor, Terry  

Olsen, Stanley J.  

Proctor, Noble S. and Patrick J. Lynch  

Rackham, James R.  

Reitz, Elizabeth and Elizabeth Wing  
Schmid, Elisabeth

Serjeantson, Dale

von den Driesch, Angela

Wheeler, Alwyne and Andrew G. Jones

Wing, Elizabeth S., editor

Woolfenden, Glen E.
Student name: ____________________________________________________________

Student email and phone: ________________________________________________

Year in school (freshman, sophomore, graduate etc): ________________________

Major: __________________________________________________________________

Minor: __________________________________________________________________

Please list other anthropology/archaeology courses taken: ____________________

________________________________________________________________________

Why are you taking this course? (Be honest; it’s OK). _________________________

________________________________________________________________________

Anything else you want me to know? _______________________________________

________________________________________________________________________

Signature: ___________________________ Date: ________________