



## COURSE DESCRIPTION

The course encompasses the study and analysis of animal remains from archaeological sites. A major objective of the course is to develop an ability to identify animal species from archaeological remains, and to develop an ability to identify the various bone elements of vertebrate species. Course content will emphasize North American terrestrial mammals from the department comparative collections, particularly bison but other groups such as fish, birds and marine mammals will also be included. The main component of the course will be a study of the techniques that may be employed to analyze animal bones once they have been identified. Techniques discussed include various quantification techniques, aging and sexing analysis, butchering pattern analysis, seasonality, and a consideration of the various cultural and natural taphonomic factors that affect archaeological remains. We will also consider the implications of these analyses for assessing social phenomena such as subsistence strategies, status, and ceremonial usage.

**Office:** ES 818

**Office Hours:** M 11:00 AM-12:15 PM and by appointment

**EMAIL:** [ELIZABETH.PARIS@UCALGARY.CA](mailto:ELIZABETH.PARIS@UCALGARY.CA)

**TA:** Matthew Longstaffe

**TA Office Hours:** TBA

**TA Email:** [matthew.longstaffe@ucalgary.ca](mailto:matthew.longstaffe@ucalgary.ca)

Any emailed questions should be first directed to the TA, and will be referred to the instructor as necessary. Please expect 48 hours for a response. If more than 48 hours have passed with no reply, check the email address and re-send. Please use your UCalgary email address for course business.

**Prerequisite:** ARKY 201

## REQUIRED READINGS

Course textbooks:

- Elizabeth Reitz and Elizabeth Wing. 2008. *Zooarchaeology* (Second Edition). Cambridge University Press.
- B. Miles Gilbert. 1980 *Mammalian Osteology*. Missouri Archaeological Society Columbia, MO. On Reserve, TFDL.
- Debbi Lee Cannon. 1987. *Marine Fish Osteology: A Manual for Archaeologists*. Department of Archaeology, Simon Fraser University (ebook available on D2L).

Suggested additional textbooks, depending on your region of focus:

- Olsen, Stanley J. 1960 *Post-Cranial Skeletal Characters of Bison and Bos*. Papers of the Peabody Museum of Archaeology & Ethnology, Volume 35. Harvard University, Cambridge (optional)
- Olsen, Stanley J. 1982 *An Osteology of Some Maya Mammals*. Papers of the Peabody Museum of Archaeology & Ethnology, Volume 73. Harvard University, Cambridge (optional)

Additional readings and resources will be listed on D2L. PDF copies and links to articles, book chapters and videos will be posted on D2L in modules that correspond to the week in which they are due.

All readings are required! Please check the schedule below for readings and due dates.

## WHAT WILL YOU LEARN?

By the end of this course, students will be expected to:

- Grasp the historical development of the field of zooarchaeology, including theoretical approaches and methods.
- Understand the basic osteology and environmental biology concepts that underlie the identification of faunal remains.
- Understand the application of zooarchaeological data to research questions and problems in anthropological archaeology.
- Apply zooarchaeological methods, techniques and concepts through lab exercises, including research design and sampling, identifications, data recording and entry, data analysis, and report preparation.
- Attain a baseline of proficiency in the field of zooarchaeological analysis that can provide the foundation for more advanced experiences and independent research.

## COURSE STRUCTURE

Grades will be based on the following course activities. Marks for each activity will be converted into a percentage of the total course grade according to the following rubric:

|    |                              |     |                                                |
|----|------------------------------|-----|------------------------------------------------|
| 1. | Participation                | 10% | See schedule                                   |
| 2. | Discussion Leadership        | 10% | Individual due dates                           |
| 3. | Practice Labs                | 20% | See schedule                                   |
| 4. | Bone identification Quizzes  | 20% | See schedule                                   |
| 5. | Bison Analysis Final Project | 20% | Portions due Oct. 28 and Friday, Nov. 8 on D2L |
| 6. | NiTs Analysis Final Project  | 20% | Portions due Dec. 2 and Dec. 11 on D2L         |

**NOTE: There is no registrar-scheduled final examination for this course.**

In this class, grades are assigned according to the following chart:

| Percentages | Letter grade | Interpretation                                         |
|-------------|--------------|--------------------------------------------------------|
| 97-100%     | A+           | <i>The A range denotes excellent performance.</i>      |
| 90-96%      | A            |                                                        |
| 86-89%      | A-           |                                                        |
| 82-85%      | B+           | <i>The B range denotes good performance.</i>           |
| 78-81%      | B            |                                                        |
| 74-77%      | B-           |                                                        |
| 70-73%      | C+           | <i>The C range denotes satisfactory performance.</i>   |
| 66-69%      | C            |                                                        |
| 62-65%      | C-           |                                                        |
| 56-61%      | D+           | <i>The D range denotes unsatisfactory performance.</i> |
| 50-55%      | D            |                                                        |
| <50%        | F            | <i>An F denotes failing performance.</i>               |

# EVALUATION METHODS

While there are separate scheduled time blocks for the lectures and labs for this class, in reality, there will be less of a separation between the activities of lectures vs. labs than the scheduling would suggest. You will be expected to attend both portions of the class, and participate fully in all aspects of the class, no matter when they are scheduled.

## 1. PARTICIPATION (10%)

This course will be in a seminar format, and students will be graded for their participation in in-class discussions and activities.

- Grading for “participation” assumes that you come to class regularly and on time, ready to talk about the required reading/assignments, and to participate in the lab activities. Your in-class comments during discussion should demonstrate to me that you have done the readings and thought seriously about them. You must also follow the rules of course etiquette (see below).
- Your participation grade will also include your participation in lab activities. This includes full participation in activity-based labs, and meeting progress goals for the Bison and NiTs projects. You are expected to remain for the entire lab period and make progress on your projects; points will be deducted if you do not.
- Participation grades for each course meeting will be assessed out of 5 points, which will include participation in lecture discussions and lab activities. You will receive a separate grade for submitted practice labs.
- If you find you are having difficulties in class, please come and see myself or the TA early in the semester to work on them. It will be hard to turn things around if you wait until the last two weeks of class to seek help.

## 2. DISCUSSION LEADERSHIP (10%)

During the second week of class, you will sign up for discussion leader project dates, normally in groups of 4 (depending on enrollment). You will work together to create a 25 minute presentation on a single topic related to zooarchaeology, to be agreed upon by the group, and approved by the professor. Each student will select a peer-reviewed article and incorporate it into the presentation; all of the articles need to be uploaded to a D2L folder by the day of the presentation (in the form of a stable URL through the library or other open access site). Students should divide the spoken portion of the presentation evenly between them, and also work collectively to create the Powerpoint. Students will be graded both on the appropriateness of their own article for the topic, and the success of the in-class presentation as a whole.

## 3. PRACTICE LABS (20%)

There will be Practice labs scheduled throughout the semester (see schedule). These will include the Aging and Sexing lab, the Quantification lab, and short in-class exercises. In total, the Practice Labs will constitute 20 percent of your final grade.

## 4. BONE IDENTIFICATION QUIZZES (20%)

There will be four quizzes in the course. Please see the course schedule below. The quizzes will be scheduled at the beginning of the lecture portion of the class meeting. The quizzes will require you to apply the knowledge that you have learned from lectures and practice labs to a set of unlabeled specimens. Each quiz will be worth 5 percent of your grade, and collectively, quizzes represent a total of 20 percent of your final grade. No study aids, notes, or electronic devices are permitted.

## 5. BISON PROJECT AND NiTs PROJECTS (20% each)

You will complete two analysis projects in this course in order to simulate the type of investigation that you would be expected to perform as a faunal analyst for a professional research project in archaeology, whether in academia or the public sector. For this project, you will analyze an actual sample of archaeological specimens. You must hand in a research report that contains a full analysis of your sample using the techniques that have been taught throughout the class.

You will receive separate project handouts with the specifications for each assignment. Make sure to follow the directions very carefully in order to receive credit.

Please note that you will receive some class time to complete the projects, but you should also arrange to spend extra time outside of class to complete your analysis. Access to the lab spaces may be arranged during instructor/TA office hours. You may email the instructor or TA to ask if they are willing to supervise at other times, but this is not guaranteed, and completely subject to instructor/TA availability and discretion.

Removing skeletal remains from laboratory spaces is not permitted for any reason. This includes materials assigned for projects and comparative collections. Removing course materials, knowingly or negligently damaging collections and/or university equipment will be reported to the university as misconduct. At the instructor's discretion, the misconduct may result in failure of the assignment and/or the course.

### MAKEUP POLICY

Participation: Participation in lecture discussions and lab activities will be assessed on a daily basis. Each student is allowed one absence without penalty. There are 23 total course meetings, meaning that your attendance will be calculated as a specific proportion of 22 meetings. Two late arrivals (i.e., walking into class after course activities have begun) will count as one absence when calculating participation. Where students have excused absences with documentation, the grade will be calculated as a proportion from the course meetings attended.

Labs and Quizzes: Rescheduling of examples labs, practice labs, and quizzes is extremely difficult due to their involved nature. Official excused absences must be reported to the instructor and TA as soon as possible, and students will need to be flexible and work with us for any attempts to reschedule.

Projects: Project may only be turned in late with an official excuse as per university policy. As it is possible to turn in written assignments prior to the due date, foreseen schedule conflicts resulting from university athletic competitions, religious observances, etc. must be arranged individually with the professor in advance. Unforeseen emergency or situations should be reported to the professor as soon as possible, and any alternative arrangements will be based on individual circumstances.

## COURSE SCHEDULE

Students should do all readings and assignments during the week in which they are assigned.

\*\*Note that the topics and readings are subject to change at any time at the professor's discretion.

| WEEK   | DUE DATE    | TOPICS AND READINGS                                                                                       |
|--------|-------------|-----------------------------------------------------------------------------------------------------------|
| Week 1 | M, Sept. 9  | <b>Topic: Introduction to the course</b><br><b>Topic: Basic Concepts: Taxonomy and Planes of the Body</b> |
|        | W, Sept. 11 | <b>Topic: Comparative mammalian anatomy</b><br>Read: R&W, Chapters 1 - 3 pp. 30-44.                       |

|        |             |                                                                                                                                                                                                                    |
|--------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Week 2 | M, Sept. 16 | <p><b>Topic: Dog Anatomy I</b></p> <p>Read: R&amp;W Chapter 4, Gilbert pp. 66-67</p> <p>Review: Gilbert p. 32-55</p> <p>LAB: Dog anatomy, Bison Project Given our, Bison Project Day 1</p>                         |
|        | F, Sept. 18 | <p><b>Topic: Dog Anatomy II</b></p> <p>Review: R&amp;W Chapter 4, Gilbert pp. 66-67</p> <p>LAB: Dog anatomy practice lab</p> <p>Confirm Discussion leader presentation topics.</p>                                 |
| Week 3 | M, Sept. 23 | <p><b>Topic: Bison (Axial)</b></p> <p>Read: Vivian et al. 2011</p> <p>LAB: Bison Project Day 2</p>                                                                                                                 |
|        | W, Sept. 25 | <p><b>Quiz 1: Dog Anatomy</b></p> <p><b>Topic: Bison (Appendicular), Comparative ungulates and semi-digitigrades</b></p> <p>Read: Gilbert pp. 56-62</p> <p>LAB: Bison Project Day 3</p>                            |
| Week 4 | M, Sept. 30 | <p><b>Topic: Taphonomy</b></p> <p>Read: R&amp;W Chapter 5, Gilbert pp. 7-26, Frison and Todd 1987, Garcia-Lorenzo 2014; Nicholson 1993</p> <p>LAB: Taphonomy, Bison Project Day 4</p>                              |
|        | W, Oct. 2   | <p><b>Topic: Mobility and Seasonality</b></p> <p>Read: R&amp;W Chapter 8, Brink 2008 Chapter 3</p> <p>LAB: Bison Project Day 5</p>                                                                                 |
| Week 5 | M, Oct. 7   | <p><b>Topic: Aging and Sexing</b></p> <p>Read: Gilbert pp. 63-65, 100—109, 152-159, Bedord 1978, Walde 2004</p> <p>LAB: Aging and Sexing Practice Lab</p>                                                          |
|        | W, Oct. 9   | <p><b>Quiz 2: Bison Anatomy</b></p> <p><b>Topic: Hunting and Butchering, Bone Tools</b></p> <p>Read: Gilbert 1990 pp. 7-30, Merritt and Davis 2017</p> <p>LAB: Bison Project Day 6</p>                             |
| Week 6 | M, Oct. 14  | <b>THANKSGIVING DAY—No class</b>                                                                                                                                                                                   |
|        | W, Oct. 16  | <p><b>Topic: Quantification (NISP, MNI, MNE, Diversity and Equity)</b></p> <p>Read: R&amp;W Chapters 6 and 7</p> <p>LAB: Quantitative Methods in Faunal Analysis</p> <p><b>Aging and Sexing Lab Report DUE</b></p> |
| Week 7 | M, Oct. 21  | <p><b>Quiz 3: Bison Fragments</b></p> <p>LAB: Bison Project Day 7</p> <p>Discussion Leader presentations #1:</p>                                                                                                   |
|        | W, Oct. 23  | <p><b>Topic: Domestication and Husbandry</b></p> <p>Read: R&amp;W Chapter 9, Crabtree 1993</p>                                                                                                                     |

|                |            |                                                                                                                                                            |
|----------------|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                |            | LAB: Bison Project Day 8<br>Discussion Leader presentations #2:<br><b>Quantification Lab Report DUE</b>                                                    |
| <b>Week 8</b>  | M, Oct. 28 | <b>Topic: Human Effects on the Environment</b><br>Read: R&W Chapter 10<br>LAB: Bison Project Day 9<br>Discussion Leader Presentations #3:                  |
|                | W, Oct. 30 | <b>Topic: Mesoamerican mammals</b><br>Read: Masson and Peraza Lope 2008<br>LAB: Bison Project Day 10<br><b>Bison Project Basics DUE on D2L at 11:59 PM</b> |
| <b>Week 9</b>  | M, Nov. 4  | <b>Topic: Marine mammals</b><br>Read: McMillan 2015<br>Discussion Leader Presentations #4:<br>LAB: Distribution of NiTs Projects, NiTs Project Day 1       |
|                | W, Nov. 6  | <b>Topic: Seals and Sea Lions</b><br>Read: Lyman 1998<br>Discussion Leader Presentations #5:<br>LAB: NiTs Project Day 2                                    |
|                | F, Nov. 8  | <b>Bison Project Final DUE on D2L at 11:59 PM</b>                                                                                                          |
| <b>Week 10</b> | M, Nov. 11 | <b>TERM BREAK</b>                                                                                                                                          |
|                | W, Nov. 13 | <b>TERM BREAK</b>                                                                                                                                          |
| <b>Week 11</b> | M, Nov. 18 | <b>Topic: Fish</b><br>Read: Cannon 1987 (Textbook)<br>LAB: Fish Anatomy, NiTs Project Day 3                                                                |
|                | W, Nov. 20 | <b>Topic: Molluscan Seashells and Crustaceans</b><br>Read: Kennett and Voorhies 1996<br>LAB: NiTs Project Day 4                                            |
| <b>Week 12</b> | M, Nov. 25 | <b>Topic: Birds</b><br>Read: Gilbert pp.3-6, 31-35, Kaiser 2007 Chapters 1 and 2<br>Discussion Leader Presentations #6:<br>LAB: NiTs Project Day 5         |
|                | W, Nov. 27 | <b>Quiz 4: Bird/Fish/Seal Anatomy</b><br><b>Topic: Reptiles and Amphibians</b><br>Read: Kysel et al. 2016<br>LAB: NiTs Project Day 5                       |
| <b>Week 13</b> | M, Dec. 2  | <b>Topic: Status, Privilege, Trade and Exchange of Animal Products</b><br>Read: deFrance 2009                                                              |

|         |            |                                                                                                                                        |
|---------|------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Week 14 |            | LAB: NiTs Project Day 7<br><b>NiTs Project Basics DUE on D2L at 11:59 pm</b>                                                           |
|         | W, Dec. 4  | <b>Topic: Animal Use in Rituals and Sacrifice</b><br>Read: Emery 2002<br>Discussion Leader Presentations #7:<br>LAB: NiT Project Day 8 |
|         | W, Dec. 11 | <b>NiTs Project Final Report DUE on D2L at 11:59 pm</b>                                                                                |

## CLASSROOM ETIQUETTE

- Please make this class a scheduling priority. It is important to arrive on time. Please only leave class before the end of the period if there is an emergency, in which case, please notify the instructor as soon as possible. We will schedule a \*short\* break during the lab, but if you need to use the restroom or grab a drink of water, please do so quietly and discretely. However, you may not leave the room during a scheduled lab quiz, for academic honesty reasons.
- Faunal specimens may not be removed from the labs and prep rooms in which they are stored.
- Food is not permitted in lab classrooms or prep rooms, because it can leave damaging residues on artifacts and analysis surfaces. You may bring a drink in a sealed, non-spill container, which you should keep stowed whenever we handle specimens. This is a long seminar with a substantial lab component, so plan accordingly. If you anticipate being hungry, please eat before coming to class. You may step out to the 8<sup>th</sup> floor carrel area for a snack during the short break. In either case, you need to wash your hands with soap after eating to remove food residues.
- This class includes lab activities that have mild safety risks that could involve the use of metal and stone cutting implements. By remaining in the class, you agree to promptly follow all safety instructions from the professor and teaching assistant. Unsafe behavior will not be tolerated, and may result in your removal from the class.
- Students are required to remain and assist with clean-up activities following labs, as directed by the instructor and TA.
- Treat everyone in the class as a colleague—show respect to both your fellow students and myself, even if you strongly disagree with someone’s opinion. Be friendly, courteous and kind during discussions. Do not talk over or interrupt the instructor or other students.
- Silence and stow your phones, and do not use them during class. They are distracting to everyone.
- Only use laptops and tablets for note-taking purposes. Using them for other activities is highly distracting. If I observe that your laptop or tablet is distracting your fellow students, I will ask you to place it on the podium for the remainder of the class period, and you will lose participation points for that day.
- You may not make video and audio recordings of lectures and review sessions without the explicit consent of the professor, nor transfer them to another student, whether or not that student is enrolled in the course. Please see the Statement on Instructor Intellectual Property below.

## PLAGIARISM AND CHEATING

The University expects Students to conduct Academic Activities with integrity and intellectual honesty and to recognize the importance of pursuing and transmitting knowledge ethically. "Academic Misconduct" includes such things as Cheating, Falsification; Plagiarism, Unauthorized Assistance and failure to comply with exam regulations or an Instructor's expectations regarding conduct required of Students completing academic assessments. Academic Misconduct is a serious form of intellectual dishonesty with significant consequences. Students who participate in, or encourage the commission of, Academic Misconduct will be subject to disciplinary action which could include Probation, Suspension, or Expulsion from the University. Students are expected to be familiar with the Student Academic Misconduct Policy (<https://www.ucalgary.ca/policies/files/policies/student-academic-misconduct-policy.pdf>).

Academic misconduct will not be tolerated. It will automatically result in a grade of zero marks for the assignment, and will be reported to the University, which may result in additional University sanctions.

## STATEMENT ON INSTRUCTOR INTELLECTUAL PROPERTY

Lectures, demonstrations, performances, and any other course material provided by an instructor includes copyright protected works under the Copyright Act and all forms of electronic or mechanical recording of lectures, laboratories, tutorials, presentations, performances, electronic (computer) information, the duplication of course material, and to the translation of recordings or transcriptions of any of these materials to another form by electronic or mechanical means by students is not permitted, except:

- As a formal accommodation as assessed by the Student Accessibility Services and only for individual private study and only at the discretion of the instructor.
- With the permission of the instructor, students without a formal accommodation may audio record lectures, provided that the student and instructor sign a release form available from departmental and faculty offices. A copy of the Release form shall be retained by the instructor and by the department in which the course is offered. Any audio recording by students is permitted only for the purposes of private study by the individual student. Students may not distribute, email or otherwise communicate these materials to any other person.
- For any other use, whether by duplication, transcription, publication, sale or transfer of recordings, written approval must be obtained from the instructor for the specific use proposed.
- Any use other than that described above (e.g. distributing, emailing or otherwise communicating these materials to any other person, constitutes academic misconduct and may result in suspension or expulsion.
- Students are encouraged to make notes of classroom discussions, lectures, demonstrations etc.

## PROTECTION OF MATERIALS UNDER COPYRIGHT T

All students are required to read the University of Calgary policy on Acceptable Use of Material Protected by Copyright ([www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf](http://www.ucalgary.ca/policies/files/policies/acceptable-use-of-material-protected-by-copyright.pdf)) and requirements of the copyright act (<https://laws-lois.justice.gc.ca/eng/acts/C-42/index.html>) to ensure they are aware of the consequences of unauthorized sharing of course materials (including instructor notes, electronic versions of textbooks etc.). Students who use material protected by copyright in violation of this policy may be disciplined under the Non-Academic Misconduct Policy

## DEFERRED EXAMS

A student who is absent from a test or quiz for legitimate reasons must discuss an alternative course of action with the instructor. Deferral of the final exam requires Registrar approval. The instructor at their discretion may transfer the percentage weight for the test to the final examination, if there is a final examination in the course, set another test, etc. Documentation supporting the reason for missing an exam may be required. Deferred exams may be in a different format than the regularly scheduled exam, e.g. essay style questions instead of multiple choice questions. Students must be aware that they are responsible for payment of any charge associated with the medical assessment and documentation as this service falls outside the realm of services provided by the Provincial Health Care Plan

## ACADEMIC ACCOMMODATIONS

<http://www.ucalgary.ca/access/accommodations/policy>

It is the student's responsibility to request academic accommodations according to the University policies ([ucalgary.ca/access/accommodations/policy](http://www.ucalgary.ca/access/accommodations/policy))

Students requesting an Accommodation on the basis of Disability are required to register with Student Accommodation Services (SAS) by submitting a Request for Accommodation in accordance with the Procedure for Accommodations for Students with Disabilities (<https://www.ucalgary.ca/policies/files/policies/procedure-for-accommodations-for-students-with-disabilities.pdf>). SAS will issue a Letter of Accommodation which must be presented to either designated contact person within the Department or the appropriate Instructors within 10 days of the beginning of term.

Students needing an Accommodation in relation to their coursework or to fulfil requirements for a graduate degree, based on a Protected Ground other than Disability, should communicate this need, preferably in writing, to their Instructor or the Department Head/Dean or to the designated contact person in their Faculty.

## STATEMENT ON THE FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

The University of Calgary is committed to protecting the privacy of individuals who work and study at the University or who otherwise interact with the University in accordance with the standards set out in the Freedom of Information and Protection of Privacy Act. The Department of Anthropology and Archaeology keeps exams and any term work not picked up for a minimum of one year after which it is destroyed. Please refer to the following link for detailed information:

<http://www.ucalgary.ca/legalservices/foip>

## WRITING ACROSS THE CURRICULUM

Writing skills are not exclusive to English courses and, in fact, should cross all disciplines. The University supports the belief that throughout their University careers, students should be taught how to write well so that when they graduate their writing abilities will be far above the minimal standards required at entrance. Consistent with this belief, students are expected to do a substantial amount of writing in their University courses and, where appropriate, members of faculty can and should use writing and the

grading thereof as a factor in the evaluation of student work. The services provided by the Writing Support, part of the Student Success Centre, can be utilized by all undergraduate and graduate students who feel they require further assistance

## EMERGENCY EVACUATION ASSEMBLY POINT

In the event of an emergency that requires evacuation, the assembly point for this course is the ICT courtyard.

## FURTHER SUPPORT AND RESOURCES

Please consult the link for information on the following campus resources:

<https://www.ucalgary.ca/registrar/registration/course-outlines>

- Emergency Evacuation/Assembly Points
- Wellness and Mental Health Resources
- Student Success Centre
- Student Ombuds Office
- Student Union (SU) Information
- Safewalk