### NORTH CAROLINA STATE UNIVERSITY
#### GRADUATE COURSE ACTION FORM

NOTE: Click once on shaded fields to type data. To check boxes, right click at box, click "Properties", and click "Checked" under Default Values.

<table>
<thead>
<tr>
<th>DEPARTMENT/PROGRAM</th>
<th>Sociology and Anthropology</th>
</tr>
</thead>
<tbody>
<tr>
<td>COURSE PREFIX/NUMBER</td>
<td>ANT 521</td>
</tr>
<tr>
<td>PREVIOUS PREFIX/NUMBER</td>
<td></td>
</tr>
<tr>
<td>DATE OF LAST ACTION</td>
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<tr>
<td>COURSE TITLE</td>
<td>Human Osteology</td>
</tr>
<tr>
<td>ABBREVIATED TITLE</td>
<td>HUMAN OSTEOLGY</td>
</tr>
<tr>
<td>SCHEDULING</td>
<td>Fall [x]  Spring [ ]  Summer [ ]  Every Year [x]  Alt. Year Odd [ ]  Alt. Year Even [ ]  Other [ ]</td>
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<tr>
<td>COURSE OFFERED</td>
<td>By Distance Education Only [ ]  On Campus Only [x]  Both On Campus and By Distance Education [ ]</td>
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<tr>
<td>CREDIT HOURS</td>
<td>3</td>
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<tr>
<td>CONTACT HOURS</td>
<td>Lecture/Recitation [x]  Seminar [ ]  Laboratory [ ]  Independent Study/Research [ ]  Internship/Practicum/Field Work [ ]</td>
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<tr>
<td>GRADING</td>
<td>ABCDF [x]  S/U [ ]</td>
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<tr>
<td>INSTRUCTOR (NAME/RANK)</td>
<td>D. Troy Case, Assistant Professor</td>
</tr>
<tr>
<td>INSTRUCTOR (RANK)</td>
<td>Graduate Faculty Status Associate [x]  Full [ ]</td>
</tr>
<tr>
<td>ANTICIPATED ENROLLMENT</td>
<td>Per semester [ ]  Max. Section 10 [ ]  Multiple Sections Yes [ ]  No [x]</td>
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<tr>
<td>PREREQUISITE(S)</td>
<td>Graduate standing or permission of instructor</td>
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<tr>
<td>COREQUISITE(S)</td>
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<tr>
<td>PRE/Corequisite For</td>
<td>ANT 524, ANT 529</td>
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<tr>
<td>RESTRICTIVE STATEMENT</td>
<td>Credit cannot be received for both ANT 421 and ANT 521</td>
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<tr>
<td>CURRICULA/MINORS</td>
<td>Required</td>
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<td>QUALIFIED ELECTIVE</td>
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| TYPE OF PROPOSAL | New Course [x]  Drop Course [ ]  Course Revision [ ]  Dual-Level Course [ ] |
| REVISION | Content [ ]  Prefix/Number [ ]  Title [ ]  Abbreviated Title [ ]  Credit Hours [ ]  Contact Hours [ ]  Grading Method [ ]  Pre/Corequisites [ ]  Restrictive Statement [ ]  Description [ ]  Scheduling [ ] |

| PROPOSED EFFECTIVE DATE | 08/07 | APPROVED EFFECTIVE DATE |  |

**CATALOG DESCRIPTION** (limit to 60 words): Survey of all the bones of the human skeleton from an anthropological perspective, including their names, important features useful in recognizing fragmentary specimens from an archaeological context, and techniques for determining the side of the body they come from. Skeletal development and its relationship to skeletal abnormalities. Issues relating to the study of archaeological skeletons. Graduate students will be required to attend an additional one-hour weekly problem section.

**RECOMMENDED BY:**

![Signature](Signature)
**Department Head/Director of Graduate Programs**

**ENDORSED BY:**

![Signature](Signature)
**Chair, College Graduate Studies Committee**

**APPROVED:**

![Signature](Signature)
**Dean of the Graduate School**
ANT 521 Human Osteology
Course Justification and Objectives.

A. Justification:

Knowledge of human skeletal anatomy is central to many of the subfields of biological anthropology, including comparative primate anatomy, hominid evolution, paleopathology, paleodemography, functional morphology, and forensic anthropology. This course examines the human skeleton from an anthropological perspective, providing a comprehensive overview of the bones of the skeleton and how to identify them based on their individual features rather than their position within an articulated skeleton. This course is intended to train students in the techniques required to reassemble a partial or complete disarticulated skeleton from an archaeological or forensic context, and to perform some basic analyses, such as determining the sex of the skeleton and taking measurements. Issues relating to the study of archaeological skeletons will also be addressed, including identification of developmental anomalies affecting various bones, the use of inherited skeletal anomalies to assess genetic relationships within groups, and critiques of current approaches to sexing and aging the skeleton. The knowledge gained and issues explored will be critical preparation to later courses in skeletal research, such as skeletal biology or bioarchaeology, and are essential knowledge needed to conduct bioarchaeological research. The course is required as part of the bioarchaeology graduate curriculum, and most will take it their first semester in the program.

B. Student Learning Objectives

By taking this course, students will be able to:

1) identify the 206 bones of the human body and determine which side of the body each bone comes from;
2) identify unique features of individual bones to aid in identifying and siding fragmentary skeletal remains from archaeological or forensic contexts;
3) explain the significance of skeletal anomalies and defects, and their potential contribution to studies of archaeological skeletons; and
4) explain how skeletal research is used to answer questions of anthropological interest.

C. Text:


D. Enrollment for last 5 years (ANT 421)

Spring 2004: 16
Fall 2005: 14
E. New Resources Needed:

No new resources needed. Reallocation of existing resources permits the offering of this course.

F. Syllabus (see attached document)

G. Explanation of Differences in Requirements for Dual-level Courses

Graduate students must complete several additional assignments to receive graduate credit. First, graduate students will read additional book chapters and journal articles (see syllabus) as part of a weekly, hour-long discussion section at which these readings will be the primary topic. Second, graduate students will take two essay exams in which they will answer questions based on the graduate readings. Third, graduate students will write a research paper that demonstrates substantially greater methodological and theoretical sophistication than the undergraduates, on a topic of methodological interest in the field of osteology.
ANT 521  HUMAN OSTEOLEGY

Class time/Room:

Instructor: Troy Case
E-Mail: dtcase@server.saww.ncsu.edu
Office Location: 1911 Building, Room 229
Office Phone: 515-9024
Office Hours: Monday: 4 PM - 5 PM, Wednesday 9 AM - 10 AM, or by appointment
Prerequisites: Graduate standing or permission of instructor


Course Description:
The primary focus of this course is human skeletal anatomy. Students will learn to identify the 206 bones of the human body, to recognize some important anatomical features on these bones, and to apply various techniques for determining whether a bone comes from the left or right side. In addition, this course will cover topics relating to skeletal development, skeletal variation and anomalies, age and sex determination, and use of skeletal data to answer questions of interest to biological anthropologists.

Attendance Policy:
Attendance is required for the problem section (one-hour each week) and lectures, and at the student’s discretion on open lab days. Open lab days are during the Wednesday class of most weeks, and provide an opportunity to spend time working with the bones at your own pace. You should make arrangements to borrow notes from a fellow student for any missed lectures. The instructor’s notes will not be made available to students. For the university policy on excused absences, see:
http://www.ncsu.edu/policies/academic_affairs/pols_regs/REG205.004.php

Evaluation:
There will be four exams in this class, each accounting for 10% of your grade. These exams will test your skills at identifying bones, determining what side of the body they come from, and recognizing various anatomical features. In addition, the exams will have a component drawn from lecture. You will also take two essay exams based on the readings for the graduate problem section (worth 20% each). The final 20% of your grade will come from a research paper due at the end of the semester. Each student will select a topic from a list of options, and write a critical review of that topic area. The grading scale for the class is: (A+) > 97.5%, (A) > 92.5%, (A-) > 89.5%, (B+) > 87.5%, (B) > 82.5%, (B-) > 79.5%, (C+) > 77.5%, (C) > 72.5%, (C-) > 69.5%, (D+) > 67.5%, (D) > 62.5%, (D-) > 59.5%, (F) < 59.5%.

Missed Exams:
Because of the time required to prepare a make-up laboratory exam, the instructor will likely administer make-up exams in interview style. You must have a valid excused absence to make up an exam.

Disabilities: Reasonable accommodations will be made for students with verifiable disabilities. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. For more information on NC State’s policy on working with students with disabilities, please see the Academic Accommodations for Students with Disabilities Regulation (REG02.20.1) at:
http://www.ncsu.edu/policies/academic_affairs/courses_undergrad/REG02.20.1.php
**Academic Integrity:** I will strictly enforce NC State’s standards of academic honesty. Please refer to the following website for further details:
http://www.ncsu.edu/policies/student_services/student_discipline/POL11.35.1.php

### COURSE OUTLINE

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<thead>
<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings &amp; Assignments</th>
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<tbody>
<tr>
<td>Week 1</td>
<td>Lower Limb: The Femur &amp; Patella</td>
<td>Text: Chapter 1</td>
</tr>
<tr>
<td></td>
<td>Intro to Course</td>
<td>Text: Chapter 3</td>
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<tr>
<td></td>
<td>Identification &amp; Siding of Femur &amp; Patella</td>
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<tr>
<td>Week 2</td>
<td>Lower Limb: Tibia, Fibula, Pelvis</td>
<td>Text: Pg. 242-255</td>
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<td></td>
<td>Identification &amp; Siding of Tibia/Fibula</td>
<td>Text: Pg. 221-230</td>
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<td>Open Laboratory</td>
<td>Week 2 Readings*</td>
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<tr>
<td></td>
<td>Identification &amp; Siding of Pelvis</td>
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<tr>
<td>Week 3</td>
<td>Lower Limb: The Tarsals</td>
<td>Chapter 2</td>
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<tr>
<td></td>
<td>Lecture: Bone Biology</td>
<td>Text: Pg. 261-268</td>
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<td></td>
<td>Open Laboratory</td>
<td>Week 3 Readings*</td>
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<tr>
<td></td>
<td>The Tarsals</td>
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<td>Week 4</td>
<td>Lower Limb: Digital Bones</td>
<td>Text: Pg. 269-275</td>
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<td>Open Laboratory</td>
<td>Week 4 Readings*</td>
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<tr>
<td></td>
<td>Identification &amp; Siding of Metatarsals</td>
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<tr>
<td>Week 5</td>
<td>Lower Limb: Digital Bones Continued</td>
<td>Text: Pg. 275-276</td>
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<tr>
<td></td>
<td>Identification &amp; Siding of Pedal Phalanges</td>
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<td>Open Laboratory</td>
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<tr>
<td></td>
<td>Slide Lecture: Skeletal Variation in the Lower Limb</td>
<td>Essay 2 Due</td>
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<tr>
<td></td>
<td>Problem Section: Essay 2 Due</td>
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<tr>
<td>Week 6</td>
<td>Exam Week &amp; Skeletal Development</td>
<td>Week 6 Readings*</td>
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Exam I
Lecture: Skeletal Development I: Appendicular Skeleton
Lecture: Skeletal Development II: Appendicular Skeleton cont.

Week 7  Trunk: Vertebrae, Ribs, Sternum, Hyoid
        Identification of Vertebrae & Sacrum
        Open Laboratory
        Identification & Siding of Ribs, Sternum, Hyoid

        Text: Chapter 6
        Text: Chapter 7
        Week 7 Readings*

Week 8  Sex Determination in Adults

        Sexing from the Pelvis
        Open Laboratory

        Week 8 Readings*

Week 9  Exam Week

        Open Laboratory
        Undergraduate Discussion – no class
        Exam II
        Problem Section: Essay 2 Due

Week 10 Upper Limb: Shoulder Girdle, Humerus, Radius, Ulna

        Identification & Siding of Clavicle, Scapula
        Open Laboratory
        Identification & Siding of Humerus, Radius, Ulna

        Text: Chapter 8
        Text: Chapter 9
        Week 10 Readings*

Week 11 Upper Limb: The Hand

        Identification & Siding of Carpals
        Open Laboratory
        Identification & Siding of Metacarpals

        Text: Pg. 200-213
        Week 11 Readings*

Date       Topic                        Readings & Assignments

Week 12    Postcranial Skeletal Variation

Page 3
Identification of Manual Phalanges
Open Laboratory
Slide Lecture: Skeletal Variation in the Torso & Upper Limb

Week 13  Exam Week & Skull: The Cranial Vault

Exam III
Identification & Siding of Cranial Vault Bones
Undergraduate Discussion – No Class

Discussion 2 Readings
Text: Pg. 53-82
Week 13 Readings*

Week 14  Skull: The Face

Text: Pg. 82-107
Week 14 Readings*

Identification & Siding of Facial Bones
Open Laboratory
Lecture: Skeletal Development III: Axial Skeleton

Week 15  Skull: The Dentition

The Dentition & Dental Variation
11/30: Undergraduate Discussion – No Class
12/02: Open Laboratory
Problem Section: Graduate Paper Presentations

Term Papers due on 12/02 at 4:30 PM

Week 16  Final Exam

Problem Section Readings*

Week 1:  Introduction to graduate section

Week 2:  Basic Concepts in Human Osteology


   Chapter 1: Basic Concepts (pg. 3-17)
   Chapter 2: Bone Structure (pg. 18-27)
   Chapter 3: Collagen & Calcification (pg. 28-37)
   Chapter 4: Bone Growth (pg. 38-50)

Week 3:  Prenatal Skeletal Development

Page 4
   Chapter 4: Early Embryological Development (pg. 32-35)

   Chapter 1: Introduction (pg. 1-8)  
   Chapter 2: The Development of Defects (pg. 9-34)


Week 4: Developmental Defects of the Lower Limbs


Week 5: Written Exam Week, No Readings

Week 6: Chondrification & Ossification


Week 7: Postnatal Development of the Lower Limbs

   Chapter 11: The lower limb (pg. 374-467)  
   Chapter 10: The pelvic girdle (pg. 341-373)

Week 8: Skeletal Growth


Week 9: Exam Week, No Readings

Week 10: Issues in Sex Determination


**Week 11: Issues in Skeletal Aging**


**Week 12: Intracemetary Skeletal Kinship Analysis**

Week 15: Graduate Research Paper: Presentation/Discussion

Week 14: Student Selected Readings on Skeletal Asymmetry (TBA)


August 29, 2006

MEMORANDUM

TO: Troy Case, Assistant Professor
    Department of Sociology and Anthropology

FROM: George Barthalmus, Interim Head of Zoology

SUBJECT: Human Osteology, ANT 521

Thank you for sharing the documentation for ANT 521 with the Department of Zoology. I am pleased to inform you that we see no problems of overlap or competition between this course and any of our own. As forensic sciences gain still more student interest perhaps our students will elect to take this course as Zoology seniors, pending permission of the instructor.

We all wish you every success in building a strong course.