Murray State University
COMMON SYLLABUS

DEPARTMENT: BIO  COURSE NUMBER: BIO 320  CREDIT HOURS: 5

I. TITLE: BIO 320: COMPARATIVE VERTEBRATE ANATOMY

On-Line Comparative Anatomy Atlas:
http://campus.murraystate.edu/academic/faculty/terry.derting/anatomyatlas/AtlasCover/comparativecover.html

II. CATALOG DESCRIPTION:
Dissection and study of representative chordate systems with emphasis on the anatomy and evolution of fishes, amphibians, reptiles, birds, and mammals. Two four-hour class sessions per week.

III. PURPOSE:
To gain an understanding of structural, functional, and evolutionary relationships among anatomical parts within and between major taxa of vertebrates.

IV. COURSE OBJECTIVES:
You shall:

learn the basic morphological features of representative chordate systems,
learn the relationships between morphological features and their functions within representative chordates,
explain the evolutionary basis of morphological differences and similarities among vertebrate taxa,
critically analyze, synthesize, and evaluate diverse sets of information concerning vertebrate anatomy,
be familiar with new developments in the field of comparative vertebrate anatomy,
understand ways in which the study of comparative vertebrate anatomy impacts directly and indirectly on human society, develop your ability to work collaboratively, and use higher level cognitive skills (i.e., analysis, synthesis, and evaluation).

V. CONTENT OUTLINE:
The content of the course is organized as a combination of system oriented and species oriented exercises. The course begins with a review of evolution and vertebrate characteristics and then introduces protochordates and the chordate taxa. The bulk of the course focuses on the anatomical structures of specific anatomical systems. Direct examination of anatomical structures and discussion of their evolution is the primary activity of the course.
VI. INSTRUCTIONAL ACTIVITIES:

Lecture and laboratory activities are integrated. For each topic studied, background information will be presented and discussed, followed by hands-on laboratory work related to that topic. You will be given written and/or oral instructions for each exercise. A majority of the laboratory work will involve dissection of preserved specimens and comparative reviews of anatomical similarities and differences among these specimens. You are responsible for reading all assigned readings. You are also responsible for learning the assigned laboratory information and techniques.

Working in pairs, each student is required to conduct a service-oriented project (i.e., a project that makes a significant contribution to other students studying comparative anatomy at MSU and elsewhere). Students may choose to make a photographic atlas of an anatomical system or part of a system of a specimen dissected in class or a specimen that you obtain on your own that was not dissected in class. You must obtain approval from the instructor regarding the specimens and/or systems that you will cover in your atlas. If you obtain specimens on your own, you must complete an atlas on two systems of one specimen, or one system for each of two specimens of different species (and preferably from two different taxonomic classes). Other ideas for atlas projects are welcome. Your atlas must include labeled photographs and appropriate text that explains important evolutionary events associated with the anatomical systems presented in your atlas. Your atlas must be submitted as a series of html files research projects through which you pose and test a hypothesis about structure and function.

VII. FIELD, CLINICAL, AND/OR LABORATORY EXERCISES:

The topic for each laboratory is given in the attached schedule.

VIII. RESOURCES:

Several resources are available to you for this course. The textbook provides an excellent overview of comparative anatomy of chordates. Rather than simply stating and describing numerous anatomical parts, the author integrates discussion of anatomy with evolution and function. Reading the text will improve your understanding of how the many individual parts of organisms function within the larger context of an organism and its environment, and evolutionary relationships among taxa. The text also contains numerous illustrations and descriptions of anatomical structures for use during dissections. The dissection manual provides excellent color photographs of dissections of most the specimens that you will study during the course. The recommended photographic atlas provides photographs of some specimens that you will dissect, but that are not illustrated in your dissection manual. It is essential that you integrate learning of structures during dissections with understanding of their evolution and function, as described in your main text.

One of the most important resources available to you is the preserved specimens. Detailed study of each specimen will provide you with a far better understanding of comparative anatomy than will simply reading the text. You will be provided with all specimens except the cat. You and your partner are responsible for purchasing a cat from the MSU Wildlife Society. You will also need to purchase gloves and to purchase or rent a dissecting kit. In addition to your specimens, a photographic atlas with accompanying text is available through the course web site and on Blackboard. You
will find this web based atlas a valuable resource when doing dissections and when studying for quizzes and exams.

Discussions with your classmates while conducting laboratory activities and studying for exams and quizzes are strongly encouraged. Discussion of concepts and questions is an excellent way of learning and checking your knowledge. The Teaching Assistants and I are available to help you during scheduled class periods. You may also schedule other meeting times with me and the TAs as needed.

IX. GRADING PROCEDURES:

Grades for all components of the course are assigned as follows:

<table>
<thead>
<tr>
<th>Grade</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>typical ability and distinctive performance</td>
</tr>
<tr>
<td>B</td>
<td>articulate, above average performance</td>
</tr>
<tr>
<td>C</td>
<td>satisfactory performance</td>
</tr>
<tr>
<td>D</td>
<td>passing work, below standard</td>
</tr>
<tr>
<td>E</td>
<td>work not acceptable for passing credit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exams</td>
<td>60%</td>
</tr>
<tr>
<td>Photographic Atlas or Research Project</td>
<td>15%</td>
</tr>
<tr>
<td>Comprehensive Final</td>
<td>20%</td>
</tr>
<tr>
<td>Quizzes</td>
<td>5%</td>
</tr>
</tbody>
</table>

Written exams will be short answer and essay in format. Exams will cover theoretical and objective information, including an emphasis on practical questions on specimens studied in class. Questions on specimens and anatomical parts that you have not seen before will also be used on exams to evaluate your ability to use the information you have learned. The final exam will cover key concepts and general information that you are expected to have learned during the semester. To assist you with your studying, the goals and objectives of each week of class, including study questions, is posted on Blackboard each week. The study questions are not questions you are likely to see on an exam. The questions are designed to help guide your studying and help you determine what you do and do not understand. A list of the anatomical parts that you are responsible for learning will also be posted each week. In addition, sample exam questions are available on the course web site. All assignments are due on the assigned due date. Work turned in late will be penalized 10% per day late. The only exception to this policy is in the event of a medical or other emergency or an approved university event (e.g., Senior Breakfast). Written documentation must be provided in evidence of such an emergency. Practical exams can only be taken at their scheduled time.
X. ATTENDANCE POLICY:

Students are expected to attend all scheduled course activities. Absence from class has been strongly correlated with poor performance on exams.

XI. ACADEMIC HONESTY POLICY:

Cheating, plagiarism (submitting another person's material as one's own, or doing work for another person which will receive academic credit) are all impermissible. This includes the use of unauthorized books, notebooks, or other sources in order to secure or give help during an assignment, the unauthorized copying of examinations, assignments, reports, or term papers, or the presentation of unacknowledged material as if it were your own work. If substantial evidence exists for a violation of this policy, you will receive a grade of 'E' for the course and a written explanation of the violation will be included in your academic file and a copy sent to the Chair of your major department. Disciplinary action may be taken beyond the academic discipline that I administer in the course itself. **It is your responsibility to verify which resources are authorized for your use in this course.**

XII. TEXT AND REFERENCES:

XII. TEXT AND REFERENCES:
**Required:**

**Recommended:**

Other texts and laboratory manuals are available in my office.

XIII. PREREQUISITES: BIO 121- Zoology