Comparative Mammalian Anatomy
Course #: 11:067:391
Summer Session II – 3cr.

Prerequisites: Biology (101-102 or 116-117), open to Juniors and Seniors
Time: Tu, Th 10:00 am – 2:00 pm
Location: Bartlett 123 (labs Round House or Bartlett 012)

Instructor: Carey Williams, Ph.D.
Office: 213E Bartlett Hall
e-mail: carey.williams@rutgers.edu
Phone: 848-932-5529

Office Hours: Email for Appointment Only

Course Objectives:
At the conclusion of this course you will be able to:

1. Identify and compare the basic internal and external anatomy of various mammals (PLG 3)
   ○ Assessment: There will be 3 in class exams, and 2 quizzes which will have questions directed toward assessing this learning goal.

2. Recognize the animal’s body structure and its relationship to comparative physiology (PLG 3)
   ○ Assessment: There will be 3 in class exams, and 2 quizzes which will have questions directed toward assessing this learning goal.

3. Investigate the research behind structural differences in the anatomy organs or systems in various mammals not talked about in class (PLG 6)
   ○ Assessment: Student will choose an anatomical topic and species to compare in a working group to write and orally communicate the differences in that anatomical organ or system in the species they choose.

Course Format:
- Classroom lectures – PowerPoint presentations, animal models and skeletons, and other demonstrations
- Laboratory – Animal limb and organ dissections
- Videos and computer programs to illustrate the various organ systems and their functions
- Class group written and oral project

Texts:
2. Supplemental handouts to be printed by instructor or from Sakai

Grading:
The grade is based on quizzes, exams, and a final project. There will be 2 quizzes over the course of the semester (30 pts each). There will be 3 exams worth 250 points total (2 worth 75 points and the last is also a final equal to 100 points). There will be NO makeup quizzes or exams! Exams will include a combination of diagrams/pictures, fill-in the blank, short answer and essay questions. Since there are only 11 class sessions, attendance is mandatory for a passing grade in this class! If you miss one session it puts you at a large risk for failing the course. The final project is described below.
Quiz Grades = 60
Exams = 250
Final project = 100
Total Points = 410

A = 90-100%
B+ = 87-89%
B = 80-86%
C+ = 77-79%
C = 70-76%
D = 60-69%
F = < 59%

Final Paper: See separate page
To be completed in groups of 3-4. Projects will be based on a research paper on the topic of anatomy that will be approved by me by a given date. The groups will critically evaluate one scientific research paper to be presented orally and as a final paper. Details of the project will be handed out separately. Project deadlines are listed below.

Other Policies:
Class participation is mandatory! Schedule is subject to change due to time constraints or guest speakers. You will be notified as soon as possible if this is the case.

All students are expected to follow University policies on academic integrity: http://academicintegrity.rutgers.edu/

Course Website: https://sakai.rutgers.edu/portal Login to the site using your NetID and password. If you are enrolled in the course there should be a tab identified by the course number.

Students are expected to attend all classes; if you expect to miss one or two classes, please use the University absence reporting website https://sims.rutgers.edu/ssra/ to indicate the date and reason for your absence. An email is automatically sent to me.

Course Schedule:

<table>
<thead>
<tr>
<th>Class #</th>
<th>Lecture Topics</th>
<th>Deadlines/Exams</th>
<th>Reading</th>
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<tbody>
<tr>
<td>July 10, 12</td>
<td>Intro, Syllabus&lt;br&gt;Terminology&lt;br&gt;Skeletal anatomy&lt;br&gt;Muscular anatomy</td>
<td>Thur. Presentation groups due</td>
<td>Ch. 1, 2, 3 &amp; 4</td>
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<td>July 17, 19</td>
<td>Muscular anatomy, conn.&lt;br&gt;Soft Tissue anatomy and support structures (tendons, ligaments, stay apparatus)</td>
<td>Tues. Quiz 1&lt;br&gt;Thur. Paper Topic Due (emailed to Dr. Williams)</td>
<td>Ch. 4 &amp; YouTube Videos on leg anatomy, &amp; 8</td>
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<td>Date</td>
<td>Topics</td>
<td>Week</td>
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<tr>
<td>July 24, 26</td>
<td>Exam</td>
<td>Tues. Exam I (through Soft Tissue and Repro)</td>
<td>Ch. 5 &amp; 6</td>
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<td>Respiratory system</td>
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<td>Thur. Paper Outline + at least 3 references (Use Sakai 'DropBox')</td>
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<td>Digestive system</td>
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<td>July 31 &amp; Aug. 2</td>
<td>Circulatory system</td>
<td>Tues. Quiz 2</td>
<td>Ch. 7 &amp; 9</td>
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<td>Urinary &amp; Lymphatic System – lecture 10-noon</td>
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<td>Thur. Rough Draft Due (use Turnitin)</td>
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<td><strong>Thur. Heart &amp; Kidney Dissections</strong>*</td>
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<td>12:30 – 2:00</td>
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<td>Aug 7, 9</td>
<td>Exam</td>
<td>Tues. Exam II (through Urinary/Lymph)</td>
<td>Ch. 10 &amp; 11</td>
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<td>Eye and Ear</td>
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<td>Skin, Hoof and Horns</td>
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<td>Nervous system lecture 10-noon</td>
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<td><strong>Thur. Brain Dissections</strong>*</td>
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<td><strong>Dr. Nick Bello, Guest Lecturer</strong></td>
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<td>Aug 14</td>
<td>Final Presentations</td>
<td>Final Presentations</td>
<td>Final Papers Due (use Turnitin)</td>
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<td>FINAL Exam</td>
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*Leg dissections will be performed out at the barn, other labs will be in the teaching lab in Bartlett but details below still apply. Detailed information will be provided the week prior to the dissection lecture. Please be prepared to get dirty and bring a lab coat if you have one or wear scrubs. I will try to provide as many as I can. Rubber gloves and utensils will also be provided.
Comparative Mammalian Anatomy
Final Project

Project Details:
To be completed in groups of 3 or 4, you may pick your own groups or submit to me your name and I will create a group for you. Groups are to pick a research paper based on comparative anatomy that will be approved by me by a given date. Only one group will be allowed per topic area; first come first serve. Some examples of topics are below:

- Biomechanics (study of movement), and form to function, comparison of quadrupeds (animals) vs bipeds (human)
- Comparative aspects of various organ systems (skeletal, digestive, reproductive...humans to rats, dogs to horses, various cat species, etc.)
- Comparison of various disease processes in mammals (muscular disorders, nervous disorders, developmental disorders, etc.)
- Structural development in different species (rates of growth, lifespan, etc.)

If you are stuck finding a topic try using PubMed, Google Scholar or Science Direct and search for Comparative Mammalian Anatomy, or if you want to be more specific try Comparative Muscular Anatomy, etc.

The groups will critically evaluate one scientific research paper (NOT A REVIEW PAPER) on the research topic to be presented during the last day of class in front of the class (8-10 min + 5 min for questions). The presentation will be organized as a literature review of the chosen paper with supporting reference such as review articles and other research papers. The literature review should include why the research was important, brief summary of the methods used in the research, ending with a discussion of results, and what conclusions can be made from this literature.

Paper Details:
Papers should be no longer than 8 pages (include page numbers), use 1.5 spacing, 12 pt font, 1” margins all around with an extra title page (page 0) listing the title or topic and group members. An additional page or pages can be used for references; they much be in the proper format (see http://jas.fass.org/misc/ifora.shtml for formatting details). Photos or figures can also be included separate from the 5 pages (please include those after the references).

Rough drafts will be submitted to Turnitin (http://www.turnitin.com/en_us/home). This will indicate where text is too similar to other resources (plagiarism) as well as point out grammar and spelling errors. Drafts will not be graded, but it is expected that these issues be addressed prior to the final submission, which will also be submitted to Turnitin for another review. Any errors left in the paper after the deadline will be graded as such.

Presentation Details:
Presentations will take place over the last day of class. (ALL papers are due the last day class). Presentations will be selected by those volunteering to go first or they will be selected randomly. Presentations should include a PPT with a summary of your findings from the research paper. Each group member should have some participation in the final presentation. Timing of these is critical. Points will be deducted for going under 8 minutes or over 10 minutes. Students will be given extra credit for asking questions at the end of each presentation (only allowed to ask 1 question per presentation).
Grading:
Final Presentation = 40 pts. (20 pts. Overall group grade, 20 pts. Individual presentation portion)
Final Paper = 40 pts. (20 pts. Overall paper grade, 20 pts, individual written section, use initials to indicate authorship by each heading)
Meeting deadlines = 10 pts.
Individual overall participation = 10 pts.
**Total = 100 pts.**

Miscellaneous:
Please see the Academic Integrity website for information on Plagiarism vs. paraphrasing, [http://academicintegrity.rutgers.edu/](http://academicintegrity.rutgers.edu/). This is very important to understand!

Also keep in mind when getting project groups together, just because you are friends doesn’t mean you will work well together in a group setting. If this becomes a problem I will create the groups randomly.