BZ 110: Principles of Animal Biology Syllabus
Spring 2023
Section 001: T/Th 3:30-4:45 pm
Yates 104

Meet your team

Learning assistants:
CSU Learning Assistants Program
BZ 110 Group Learning Sessions:
Mon-Wed, 5-9 pm; TILT (Great Hall)
Learning assistants assist during class, lead group learning sessions and exam reviews, and tutor students.

Instructor:
Karen Raines, Ph.D. (she, her, hers)
Email: karen.raines@colostate.edu
Office: Biology 208
Office hours: T/Th 2-2:30 M 3-4 or by appointment.
Dr. Raines is available to help with understanding course content and assignments and assist with study strategies.
Principles of Community

As part of the CSU community, we affirm all students in and out of the classroom. We welcome and value all voices, identities, and abilities.

CSU Principles of Community

Academic Integrity

Academic integrity lies at the core of our common goal: to create an intellectually honest and rigorous community. Because academic integrity, and the personal and social integrity of which academic integrity is an integral part, is so central to our mission as students, teachers, scholars, and citizens, you will be asked to respond to the following statement on your exams:

*I have not given, received, or used any unauthorized assistance.*

CSU University Policies Webpage

Course Description

Principles of Animal Biology is organized into 3 parts: common life processes, survey of major animal phyla, and animal form and function. Part 1, common life processes, will introduce cell and tissue structure and function, cell division, Mendelian genetics, the genetic basis of evolution and the evolutionary and ecological principles that unify all life. Part 2, survey of animals, will emphasize evolutionary and ecological relationships, aspects of animal organization that unite major animal phyla, and animal adaptations. Part 3, animal form and function, will detail select organ systems in invertebrates and vertebrates.

Course Objectives

Upon successful completion of this course, students will be able to:

- distinguish prokaryotic and eukaryotic cells
- recognize and describe structures of a eukaryotic cell
- differentiate types of tissues found in animals
- model genetic mechanisms, sex determination and cell division
- interpret evolutionary mechanisms that lead to speciation
- illustrate ecological processes at work in animal populations
- consider threats to global biodiversity
- classify animals using taxonomic criteria
- analyze animal form and function
- survey major animal phyla

APPRECIATE BIODIVERSITY! Biodiversity
Textbook and McGraw Hill Connect

The textbook for the course is Zoology, 11th ed, by Miller and Tupper. To reduce your course material cost, the CSU Bookstore participates in the Inclusive Access Program using Connect for Zoology which will include online homework and access to the full text. Note: All enrolled students are automatically included in this program, the cost is about $66.

Connect for Zoology Access Instructions

- You will use McGraw’s courtesy access until the Add/Drop date.
- Use the following URL to obtain your free trial access: https://connect.mheducation.com/class/k-raines-bz-110-section-001-spring-2023

- If you (the student) choose to opt out of the program provided by the CSU Bookstore, you must purchase the access code on your own.
- If you choose not to opt out a code will be emailed to you which will provide you access to the class materials for the remainder of the semester after Add/Drop date.
- PLEASE check your email (colostate.edu address) after Add/Drop date to receive the full code.

Instructional Methodology

We will take a team approach to our study of zoology. Students will be asked to prepare for class by completing chapter assignments the night before each class session. During class there will be instructor presentations, group assignments, videos, discussions, and occasionally guest speakers. Ample time will be given in class for completion of group assignments and canvas quizzes. CSU Canvas
Exams

Exams will consist of 60 multiple choice questions. The lowest exam will be dropped. **There will be no makeup exams.** The final exam will be a mandatory cumulative exam.

Methods of Evaluation

<table>
<thead>
<tr>
<th>Grade Points</th>
<th>Grade Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>SmartBook assignments: 25 (5 points each) 125</td>
<td>13</td>
</tr>
<tr>
<td>Canvas Quizzes 10 (10 points each) 100</td>
<td>11</td>
</tr>
<tr>
<td>In-class Assignments ~12 (10 points each) 120</td>
<td>12</td>
</tr>
<tr>
<td>Exams: 4 (120 points each)-lowest exam dropped: 360</td>
<td>38</td>
</tr>
<tr>
<td>Cumulative Final Exam: 240</td>
<td>26</td>
</tr>
<tr>
<td>Total Points Possible: 945</td>
<td>100%</td>
</tr>
</tbody>
</table>

Grades

To calculate final course grades, the total number of points earned (exam scores – lowest exam + SmartBook assignments + In-class assignments + Canvas quizzes + Final exam) will be divided by total points possible (945). The average will be multiplied by 100 and the grades will be assigned using the following scale:

<table>
<thead>
<tr>
<th>Letter Grade</th>
<th>Numerical Equivalent</th>
</tr>
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<tbody>
<tr>
<td>A+</td>
<td>98-100</td>
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<tr>
<td>A</td>
<td>93-97</td>
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<tr>
<td>A-</td>
<td>90-92</td>
</tr>
<tr>
<td>B+</td>
<td>87-89</td>
</tr>
<tr>
<td>B</td>
<td>83-86</td>
</tr>
<tr>
<td>B-</td>
<td>80-82</td>
</tr>
<tr>
<td>C+</td>
<td>77-79</td>
</tr>
<tr>
<td>C</td>
<td>70-76</td>
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<tr>
<td>D</td>
<td>60-69</td>
</tr>
<tr>
<td>F</td>
<td>0-59</td>
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</table>
NEED HELP?

**CSU University Policies Webpage**

If you are feeling depressed, overwhelmed, or experiencing a mental health emergency, counseling services has trained professionals who can help. **Contact 970-491-6053 or go to 3rd floor of the CSU Health and Medical Services building.** If you are concerned about a friend or peer, tell someone by calling 970-491-1350 to discuss your concerns with a professional who can discreetly connect the distressed individual with the proper resources (http://safety.colostate.edu/tell-someone.aspx). **In the case of a life-threatening emergency, call 911.**

Other resources include:

**TELEPHONE SERVICES**

**CSU Health Network On-Call Counselor:** (970) 491-7111 – The on-call staff member will typically return the call within 15 minutes.

**Colorado Crisis Services/Suicide Prevention Lifeline:** (970) 494-4200 or (844) 493-TALK (8255)

**National Suicide Prevention Lifeline:** (800) 273-TALK (8255)

**Transgender Suicide Prevention Hotline (Trans Lifeline):** (877) 565-8860

**24/7 WALK-IN MENTAL HEALTH SERVICES**

**SummitStone Community Crisis Clinic**
1217 Riverside Ave., Fort Collins, CO 80524 (970) 494-4200
24/7 EMERGENCY ROOM SERVICES

**Poudre Valley Hospital**  
1024 S Lemay Ave, Fort Collins, CO  80524  (970) 495-7000

**Banner Fort Collins Medical Center**  
4700 Lady Moon Dr., Fort Collins, CO  80528  (970) 821-4000

**UCHealth Emergency Room — Harmony**  
4630 Snow Mesa Dr., Fort Collins, CO  80528  (970) 237-8100
# Principles of Animal Biology

## Learning Objectives

### January 16-February 9

**Common Life Processes**
- Distinguish prokaryotic and eukaryotic cells.
- Recognize and describe structures of a eukaryotic cell.
- Differentiate types of tissues found in animals.
- Model genetic mechanisms, sex determination and cell division.
- Interpret evolutionary mechanisms that lead to speciation.

### February 13-March 2

**Common Life Processes & Survey of Major Animal Phyla I**
- Illustrate ecological processes at work in animal populations.
- Consider threats to global biodiversity.
- Classify animals using taxonomic criteria.
- Compare protostomes and deuterostomes.
- Examine the animal phyla Porifera, Cnidaria and Platyhelminthes.
- Distinguish the sponge classes Calcarea, Hexactinellida and Demospongiae.
- Distinguish the cnidarian classes Anthozoa, Scyphozoa and Hydrozoa.
- Distinguish the flatworm classes Turbellaria, Trematoda and Cestoidia.
- Describe life cycles of parasitic flatworms.

## Schedule

<table>
<thead>
<tr>
<th>Lecture Date(s)</th>
<th>Chapter #: Topic</th>
<th>SmartBook due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 17</td>
<td>1: Intro to Zoology</td>
<td>Jan 20</td>
</tr>
<tr>
<td>Jan 19</td>
<td>2: Cell Structure &amp; Function</td>
<td>Jan 18</td>
</tr>
<tr>
<td>Jan 24,26 &amp; 31</td>
<td>3: Genetics</td>
<td>Jan 23</td>
</tr>
<tr>
<td>Feb 2</td>
<td>4: Evolution: History &amp; Evidence</td>
<td>Feb 1</td>
</tr>
<tr>
<td>Feb 7</td>
<td>5: Evolution: Gene Frequencies</td>
<td>Feb 6</td>
</tr>
</tbody>
</table>

**Quiz 1 (Jan 26)**
**Quiz 2 (Feb 2)**
**Exam 1, chapters 1-5 (Feb 9)**

<table>
<thead>
<tr>
<th>Lecture Date</th>
<th>Chapter #: Topic</th>
<th>SmartBook due date</th>
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</thead>
<tbody>
<tr>
<td>Feb 14</td>
<td>6: Ecology</td>
<td>Feb 13</td>
</tr>
<tr>
<td>Feb 16</td>
<td>7: Organization &amp; Phylogeny</td>
<td>Feb 15</td>
</tr>
<tr>
<td>Feb 21</td>
<td>8: Animal Origins &amp; Highlights</td>
<td>Feb 20</td>
</tr>
<tr>
<td>Feb 23</td>
<td>9: Phyla Porifera &amp; Cnidaria</td>
<td>Feb 22</td>
</tr>
<tr>
<td>Feb 28</td>
<td>10: Phylum Platyhelminthes</td>
<td>Feb 27</td>
</tr>
</tbody>
</table>

**Quiz 3 (Feb 16)**
**Quiz 4 (Feb 23)**
**Exam 2, chapters 6-10 (Mar 2)**
Learning Objectives

March 6-30

Survey of Major Animal Phyla II

Examine the animal phyla Mollusca, Annelida, Nematoda and Arthropoda.

Distinguish the molluscan classes Gastropoda, Bivalvia and Cephalopoda.

Distinguish the annelid classes Errantia and Sedentaria.

Describe life cycles of parasitic nematodes.

Distinguish the arthropod subphyla Trilobitomorpha, Chelicerata, Crustacea, Myriapoda and Hexapoda.

Distinguish the chelicerate classes Merostomata and Arachnida.

Distinguish the crustacean classes Malacostraca and Maxillopoda.

Distinguish the myriapod classes Diplopoda and Chilopoda.

Distinguish the hexapod classes Entognatha and Insecta.

Discriminate the insect orders Coleoptera, Diptera, Lepidoptera and Hymenoptera.

April 3 - 20

Survey of Major Animal Phyla III

Examine the animal phyla Echinodermata and Chordata.

Distinguish the echinoderm classes Asteoidea, Echinoidea, Ophiuroidea and Holothuroidea.

Distinguish the chordate subphyla Urochordata, Cephalochordata and Craniata.

Detail the infraphylum Vertebrata.

Survey classes of fishes and nonmammalian tetrapods.

Analyze terrestrial adaptations of amniotes.

Schedule

<table>
<thead>
<tr>
<th>Lecture Date</th>
<th>Chapter #: Topic</th>
<th>SmartBook due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar 7</td>
<td>12: Phylum Annelida</td>
<td>Mar 6</td>
</tr>
<tr>
<td>Mar 9</td>
<td>13: Phylum Nematoda</td>
<td>Mar 8</td>
</tr>
<tr>
<td>Mar 21</td>
<td>11: Phylum Mollusca</td>
<td>Mar 20</td>
</tr>
<tr>
<td>Mar 23</td>
<td>14: Phylum Arthropoda Part I</td>
<td>Mar 22</td>
</tr>
<tr>
<td>Mar 28</td>
<td>15: Phylum Arthropoda Part II</td>
<td>Mar 27</td>
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Quiz 5 (Mar 9)
Spring Break (Mar 13-17)
Quiz 6 (Mar 23)
Exam 3, chapters 11-15 (Mar 30)

<table>
<thead>
<tr>
<th>Lecture Date</th>
<th>Chapter #: Topic</th>
<th>SmartBook due date</th>
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<tbody>
<tr>
<td>Apr 4</td>
<td>16: Phylum Echinodermata</td>
<td>Apr 3</td>
</tr>
<tr>
<td>Apr 6</td>
<td>17: Phylum Chordata</td>
<td>Apr 5</td>
</tr>
<tr>
<td>Apr 11</td>
<td>18: Fishes</td>
<td>Apr 10</td>
</tr>
<tr>
<td>Apr 13</td>
<td>19: Amphibians</td>
<td>Apr 12</td>
</tr>
<tr>
<td>Apr 18</td>
<td>20: Non-avian Reptiles</td>
<td>Apr 17</td>
</tr>
<tr>
<td>Apr 18</td>
<td>21: Avian Reptiles</td>
<td>Apr 19</td>
</tr>
</tbody>
</table>

Quiz 7 (Apr 6)
Quiz 8 (Apr 13)
Exam 4, chapters 16-21 (April 20)
Learning Objectives

April 24-May 4
Survey of Major Animal Phyla IV & Animal Form and Function

- Describe characteristics of the vertebrate class Mammalia.
- Distinguish monotremes, marsupials and placental mammals.
- Survey the mammalian orders Primates and Rodentia.
- Contrast invertebrate and vertebrate mechanisms of gas exchange.
- Compare open and closed circulatory systems.
- Discriminate single loop and double loop circulation of vertebrates.
- Analyze micronutrients and macronutrients of animals.
- Discuss feeding strategies in invertebrates and vertebrates.
- Describe invertebrate and vertebrate digestive tracts.
- Explain benefits of sexual reproduction.
- Illustrate reproductive strategies of invertebrates.
- Distinguish vertebrate reproductive strategies.

Schedule

<table>
<thead>
<tr>
<th>Lecture Date</th>
<th>Chapter #: Topic</th>
<th>SmartBook due date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr 25</td>
<td>22: Mammals</td>
<td>Apr 24</td>
</tr>
<tr>
<td>Apr 27</td>
<td>26: Gas Exchange &amp; Respiration</td>
<td>Apr 26</td>
</tr>
<tr>
<td>May 2</td>
<td>27: Nutrition &amp; Digestion</td>
<td>May 1</td>
</tr>
<tr>
<td>May 4</td>
<td>29: Reproduction</td>
<td>May 3</td>
</tr>
</tbody>
</table>

Quiz 9 (Apr 27)
Quiz 10 (May 4)

Cumulative Final Exam (May 8 at 9:40 am)
60 questions from exams 1-4
60 questions from chapters 22 & 26-29