BIOLOGY 334-001, L01 - HERPETOLOGY

College of Charleston, Department of Biology
Spring 2022

Lecture meets: 10:50 a.m.–12:05 p.m. T, R; RITA 261
Laboratory meets: 12:30–4:30 p.m. T; RITA 261

Instructor: Dr. Allison Welch (she/her)  TA: Hunt Jones
Office: RITA 235  Email: jonesh2@g.cofc.edu
Email: welcha@cofc.edu
Office hours: 12:30–1:30 p.m. Thu or by appointment

Course Description: Herpetology is the scientific study of amphibians and reptiles. This course addresses the biology of these fascinating organisms, including their evolutionary history, taxonomy and systematics, structure and function, behavior and ecology. This course will emphasize the integrative nature of modern herpetology by (1) drawing together concepts from various levels of biological organization to understand the biology of amphibians and reptiles, and (2) highlighting how the study of these organisms has advanced our understanding of general concepts in physiology, behavior, ecology, and evolution.

Laboratory is an essential component of the course, in which you will gain first-hand experience with the organisms and concepts discussed in lecture. Investigations of preserved specimens in the laboratory will allow you to become familiar with the structure, taxonomy, diversity, and adaptations of amphibians and reptiles. Field trips will provide experience with local amphibians and reptiles in their natural habitat as well as an introduction to field research techniques.

Student Learning Outcomes: At the end of this course, students are expected to be able to:

- describe the evolutionary history and phylogeny of amphibians and reptiles.
- discuss key features of the reproduction, life histories, behavior and physiology of amphibians and reptiles, and relate these features to the ecology and evolutionary history of these organisms.
- identify and describe evidence of shared ancestry, convergent evolution, and adaptation in the structure and function of various amphibians and reptiles.
- interpret, evaluate, and synthesize information from primary herpetological literature.
- describe and identify major taxa of amphibians and reptiles.
- identify herpetofauna of South Carolina to the species level.
- use field techniques to study local herpetofaunal communities and populations.


Prerequisites: BIOL 111, 112, 211  Pre- or corequisites: BIOL 305, MATH 250
COMMUNITY STANDARDS

Welcome! You can expect me to promote a welcoming learning environment for all students, and I expect you to do the same. In this class, we will interact in a way that values each member of our class community. This includes using nonjudgmental language, welcoming different perspectives, experiences, and identities, encouraging others to speak, giving our full attention to whomever has the floor, and responding to others with maturity and respect. We will also hold ourselves to high academic standards by staying on topic and by distinguishing between evidence and opinion.

Conduct during class – Please behave in a way that is respectful of yourself, each other, and our learning environments (classroom, lab, and field). Please arrive on time and ready to learn, and please wait until the class period is over to pack up. Food and beverages are not allowed in the laboratory/classroom or field. Electronic devices should be stowed in your bag during lecture; electronic devices may be used for class purposes during laboratory sessions. Many laboratory activities are self-paced, and the best way to learn the material and prepare for quizzes and exams is to investigate the material in depth. As such, you are expected to make wise use of your time in the laboratory.

Public health – Please respect the health of our community by wearing a mask properly, maintaining social distancing as much as possible, keeping food and drink out of the classroom (you may step into the hallway if you need a drink or snack, particularly during lab), and staying home when ill or when in quarantine or isolation.

Communication – Please be professional, positive, and polite in all communications and interactions that are part of this class. Be clear and concise, stay on topic, back up your points with evidence, and cite your sources. Do not assume that everyone shares your perspective. Encourage others to share their perspectives and ideas, be prepared to learn from each other, and respect others' views even if they differ from your own.

COURSE POLICIES

Attendance and participation – Engaged, courteous, and on-topic participation is expected in both lecture and lab and will contribute to your grade. Your attendance at every class meeting is expected, and your attendance and active participation in laboratory and on field trips are mandatory, unless you are ill, in quarantine or isolation, or have an unavoidable emergency.

Please let me know ASAP if you are unable to attend for any reason. If you are sick, please stay home! If you are in quarantine or isolation, reasonable accommodation will be made to allow you to remain in the course. However, due to the nature of certain class activities, not all experiences can be made up; in these cases, accommodations may involve alternate ways to learn the material.

Exams and quizzes – Lecture and laboratory exams will be comprehensive; material from field trips will be covered on laboratory exams. Lecture and laboratory quizzes are designed to help you keep up with the large amount of material in this course. Quizzes will focus primarily on the most recent material (i.e., since the most recent quiz or exam), but may also require that you recall concepts from earlier in the semester. Any student eligible for accommodation due to disability should make arrangements with me as soon as possible.
If you must miss an exam or quiz, you are required to discuss this with me well in advance. Due to the nature of the course material, it may not be possible to make up missed exams or quizzes. An alternate assignment or make-up exam may be offered, at my discretion, for excused absences. Travel plans are not excused absences – please plan accordingly.

Field trips – Come prepared for outdoor activities by wearing long pants and sturdy, closed, low-heeled shoes and bringing rain gear, sunscreen, insect repellent, etc. Please note that insect repellants can be toxic to amphibians; use judiciously. Appropriate attire is imperative for field trips, for your safety and comfort and for the good of the group. Students whose attire is inappropriate will not be allowed to participate and will sacrifice participation points.

College vans will be used for field trips. Students may not provide their own transportation except under special pre-arranged circumstances; many field trip locations are not conducive for personal vehicles. All students must sign a waiver before participating in field trips.

Field guide and lab/field notebook – Bring your field guide and lab/field notebook to every lab and field trip. Not doing so will affect your ability to learn, as well as your participation grade.

Online resources – Course resources will be available via OAKS; please subscribe to OAKS notifications.

Writing resources and avoiding plagiarism – Any time you use information or ideas from someone else, you must put it in your own words and include a citation. Using someone else’s words in rearranged form is considered plagiarism – be sure to thoroughly paraphrase or summarize your sources using your own words and your own voice. (Direct quotes are rarely used in scientific communication and always require quotation marks as well as a citation.) If you are not sure whether you are using sources properly, or if you would like help with other aspects of the writing process, please refer to the CofC Writing Lab: http://csl.cofc.edu/labs/writing-lab, the Purdue Online Writing Lab: https://owl.purdue.edu/owl, or contact me.

Originality and authorship of work – All work in this class must be completed individually, without collaboration with others, unless the instructor explicitly specifies that students may work together. Unauthorized collaboration (working together without permission) is considered a form of cheating.

Research conducted and/or papers written for other classes or projects cannot be used, in whole or in part, for any assignment in this class. In rare cases, permission may be granted for a student to build on work conducted in another context, but only when this would provide significantly greater learning for the individual student and/or the class as a whole. This is a rare exception and not the norm, and permission must be sought early.

Getting help – I encourage you to meet with me during office hours (in-person or virtually) to ask questions. I’m always willing to take time to help you better understand the course material. In addition, the Center for Student Learning (http://csl.cofc.edu/) offers a variety of free, helpful resources, including study strategies workshops and speaking and writing labs.


**COLLEGE POLICIES AND RESOURCES**

*Potential temporary modification of instruction* – If one or more students are absent for an extended period of time due to COVID-19 quarantine or isolation, or if the instructor is unable to attend in person due to quarantine, isolation, or other illness, mode of instruction may shift to online synchronous (i.e., zoom), at the instructor's discretion. In such a case, students will be notified via email and OAKS with as much lead-time as possible. If one or more students is unable to attend class in person due to COVID-19 quarantine or isolation or other illness, the affected student may be allowed to attend virtually and/or the class session may be recorded, at the instructor's discretion.

*Potential interruption of instruction* – If in-person classes are suspended for weather, public health, or other reasons, the course will continue in a synchronous online format unless otherwise announced.

*Potential recording of classes* – If necessary to accommodate modified instruction, class sessions may be recorded by the instructor. By attending and remaining in this class, the student consents to being recorded. Recorded class sessions are for instructional use only and may not be shared with anyone who is not enrolled in the class.

*Disabilities accommodation* – Any student eligible for and needing accommodations because of a disability is requested to speak with me during the first two weeks of class or as soon as you have been approved for services so that reasonable accommodations can be arranged. For help, please contact the Center for Disability Services/SNAP: [http://disabilityservices.cofc.edu/](http://disabilityservices.cofc.edu/).

*Inclusion* – I will gladly honor your request to address you by the name and gender pronouns of your choice. Please advise me of this at your earliest convenience via your college-issued email account or in person. A gender-neutral restroom can be found on the first floor of RITA. For more resources, see [http://gender-sexuality-equity.cofc.edu/](http://gender-sexuality-equity.cofc.edu/).

*Religious accommodation* – The College will make reasonable accommodation for religious observance in regard to class attendance and exam scheduling, unless the accommodation would create an undue hardship on the College. To request accommodation, please contact me at least one week in advance. Regardless of any accommodation that may be granted, students are responsible for satisfying all requirements of the course.

*Support services* – At times, students may experience difficulties that can interfere with learning, such as physical and mental health challenges, assault or abuse, and food or housing insecurity. If you or someone you know is experiencing any of these difficulties, various resources on campus are available to help. The Office of the Dean of Students (843-953-5522; [http://deanofstudents.cofc.edu](http://deanofstudents.cofc.edu)) can direct you to resources and support. If you are comfortable reaching out to me, I may be able to help you navigate your coursework and identify available resources while remaining sensitive to your situation.

- **Mental and physical wellbeing:** If you find yourself experiencing physical illnesses, please reach out to Student Health Services (843-953-5520). And if you find yourself experiencing any mental health challenges (for example, anxiety, depression, stressful life events, sleep deprivation, and/or loneliness/homesickness) please consider contacting either the Counseling Center (professional counselors at [http://counseling.cofc.edu](http://counseling.cofc.edu) or 843-953-5640,
3rd floor Robert Scott Small Building) or the Students 4 Support (certified volunteers through texting "4support" to 839863, http://counseling.cofc.edu/s4s/index.php or meet with them in person at 3rd floor Stern Center). These services are there for you to help you cope with difficulties you may be experiencing and to maintain optimal physical and mental health.

- Food and housing resources: The College of Charleston offers assistance for students who have difficulty affording groceries or accessing sufficient food to eat every day, or who lack a safe and stable place to live. If food or housing troubles are affecting you, please contact the Dean of Students for support. You can visit the Cougar Pantry in the Stern Center (2nd floor), a student-run food pantry that provides dry-goods and hygiene products at no charge to any student in need. More on- and off-campus resources can be found at http://studentaffairs.cofc.edu/student-food-housing-insecurity and https://advising.cofc.edu/student-resources/community-resource-guide.php, including free excess food from campus events, meal swipes, and temporary housing.

- Other Resources:
  - Always call 911 for emergencies
  - Emergency Resources: http://studenthealth.cofc.edu/emergencies
  - Office of Victim Services: http://victimservices.cofc.edu
  - Collegiate Recovery Program: http://deanofstudents.cofc.edu/collegiate-recovery-program
  - Center for Student Learning: http://csl.cofc.edu
  - Students of Concern: http://deanofstudents.cofc.edu/students-concern

**HONOR CODE AND ACADEMIC INTEGRITY**

Academic integrity is essential at the College of Charleston and to the practice of science. You will therefore be held to a high standard of integrity in this course.

Plagiarism, lying, cheating, and attempted cheating are violations of our Honor Code and will be handled as outlined in the Student Handbook. Please be absolutely sure that you understand what the Honor Code requires of you. If you have any questions or concerns about Honor Code expectations or about how to avoid violations, please consult with me before potentially committing a violation.

Plagiarism is any use of words or ideas produced by another person without proper attribution and includes failing to paraphrase adequately or to cite sources properly. Plagiarism, both intentional and unintentional, is forbidden by the Honor Code. Please consult with me if you have any questions or concerns about how to use and cite sources to avoid plagiarism.

SAFETY POLICIES

During this course, you may be exposed to potential hazards in the laboratory and field. To ensure your safety, participation in the course requires adherence to safety standards. Students that are not in compliance will not be allowed to participate in lab or field activities. Any coursework missed due to lack of safety compliance will be treated as an unexcused absence.

1. You are responsible for knowing the hazards associated with materials being used in the laboratory as well as environments and organisms that may be encountered in the field. Listen to all instructions and ask questions about that which you do not understand.
   a. The laboratory will make use of specimens preserved in ethyl alcohol (ethanol), which can be potentially hazardous. The MSDS safety information for ethyl alcohol is available in the laboratory.
   b. Potentially dangerous animals may be encountered on field trips. Do not touch any snake unless it is confirmed to be non-venomous. Alligators may be passively observed only.

2. Know the appropriate emergency response procedures. For routine incidents (minor burns, cuts, spills, etc.) call 3-5611. For serious emergencies and all fires call 911. Know the location of safety equipment including telephones, eyewash, fire extinguisher, fire pull, and first aid kit.

3. Do not work alone in the laboratory if you are working with hazardous materials. Do not work alone in the field: always work in pairs or groups, and do not venture away from the class.

4. Do not engage in horseplay, pranks or other acts of mischief while in lab or on field trips.

5. Drinking, eating, and application of cosmetics is forbidden in the laboratory. Smoking is forbidden in all College buildings and vehicles, and on field trips.

6. Closed toe shoes are required in the laboratory and in the field. The heel and top of foot must be covered. Sandals and perforated shoes are not permitted.

7. Appropriate protective gloves will be available in the laboratory. Students are required to provide protective eyewear. If skin irritations are detected, wash exposed surface with mild soap and plenty of water. If alcohol is splashed on eyes, immediately flush eyes with plenty of water for 15 minutes.

8. Appropriate clothing must be worn on field trips, as described by the instructor, including long pants and sturdy, closed toe shoes.

9. During field trip travel, seatbelts must be used at any time that the vehicle is in motion.

10. Broken glass and any other sharp objects should be disposed of in specially labeled containers in the laboratory.

11. Clean up the work area when you are done. Before leaving the laboratory or field vehicles, you are responsible for making sure your space is clean and organized.

12. Always have your College of Charleston identification and insurance information with you when working in a laboratory or in the field. MedicAlert identification must be worn if you have any potential life-threatening chemical sensitivities or medical conditions.

13. Report any accident or injury, however minor, to the instructor immediately. An accident report form must be completed and forwarded to the department chair, dean, and to the Director of Environmental Health and Safety.
## LECTURE SCHEDULE

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture topic / activity</th>
<th>Reading*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 11</td>
<td>Herpetology as a field of study</td>
<td>Ch 1</td>
</tr>
<tr>
<td>Jan 13</td>
<td>Evolutionary origins of tetrapods</td>
<td>Ch 2</td>
</tr>
<tr>
<td>Jan 18</td>
<td>Amphibian evolution</td>
<td>Ch 2</td>
</tr>
<tr>
<td>Jan 20</td>
<td>Amphibian diversity 1 / Quiz 1</td>
<td>Ch 3</td>
</tr>
<tr>
<td>Jan 25</td>
<td>Amphibian diversity 2</td>
<td>Ch 3</td>
</tr>
<tr>
<td>Jan 27</td>
<td>Amphibian reproduction / Literature discussion 1*</td>
<td>Ch 8</td>
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<tr>
<td>Feb 1</td>
<td>Amphibian life history</td>
<td>Ch 8</td>
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<tr>
<td>Feb 3</td>
<td>Mating systems and sexual selection / Quiz 2</td>
<td>Ch 14</td>
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<tr>
<td>Feb 8</td>
<td>Amphibian communication / Literature discussion 2*</td>
<td>Ch 13</td>
</tr>
<tr>
<td>Feb 10</td>
<td>Reptile evolution</td>
<td>Ch 2</td>
</tr>
<tr>
<td>Feb 15</td>
<td><strong>LAB QUIZ 1</strong></td>
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<tr>
<td>Feb 17</td>
<td>Reptile diversity 1/ Quiz 3</td>
<td>Ch 4</td>
</tr>
<tr>
<td>Feb 22</td>
<td>Reptile diversity 2</td>
<td>Ch 4</td>
</tr>
<tr>
<td>Feb 24</td>
<td><strong>MIDTERM EXAM</strong></td>
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<tr>
<td>Mar 1</td>
<td>Reptile reproduction and life history</td>
<td>Ch 9</td>
</tr>
<tr>
<td>Mar 3</td>
<td>Reptile communication</td>
<td>Ch 13</td>
</tr>
<tr>
<td>Mar 8, 10</td>
<td><em><strong>Spring break – no class</strong></em></td>
<td></td>
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<tr>
<td>Mar 15</td>
<td>Water relations</td>
<td>Ch 6</td>
</tr>
<tr>
<td>Mar 17</td>
<td>Temperature relations / Literature discussion 3*</td>
<td>Ch 6</td>
</tr>
<tr>
<td>Mar 22</td>
<td><strong>LAB QUIZ 2</strong></td>
<td></td>
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<tr>
<td>Mar 24</td>
<td>Performance and energetics</td>
<td>Ch 7</td>
</tr>
<tr>
<td>Mar 29</td>
<td><strong>FIELD TRIP – starts at 10:50</strong></td>
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<tr>
<td>Mar 31</td>
<td>Body support and locomotion / Quiz 4</td>
<td>Ch 10</td>
</tr>
<tr>
<td>Apr 5</td>
<td>Movement and orientation / Literature discussion 4*</td>
<td>Ch 12</td>
</tr>
<tr>
<td>Apr 7</td>
<td>Feeding</td>
<td>Ch 11</td>
</tr>
<tr>
<td>Apr 12</td>
<td>Trophic relations</td>
<td>Ch 15</td>
</tr>
<tr>
<td>Apr 14</td>
<td>Communities and ecosystems</td>
<td>Ch 16</td>
</tr>
<tr>
<td>Apr 19</td>
<td><strong>FIELD TRIP – starts at 10:50</strong></td>
<td></td>
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<tr>
<td>Apr 21</td>
<td>Conservation</td>
<td>Ch 17</td>
</tr>
<tr>
<td>Apr 28 (Thu)</td>
<td><strong>FINAL EXAM: 10:30 a.m. – 12:30 p.m.</strong></td>
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</tbody>
</table>

*Literature discussion readings will be available via OAKS.*
# Laboratory Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Laboratory topic/activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan 11</td>
<td>Characters and phylogenies</td>
</tr>
<tr>
<td>Jan 18</td>
<td>Amphibian diversity I: Caudata</td>
</tr>
<tr>
<td>Jan 25</td>
<td>Amphibian diversity II: Caudata, continued + Anura</td>
</tr>
<tr>
<td>Feb 1</td>
<td>Amphibian diversity III: Anura, continued</td>
</tr>
<tr>
<td>Feb 8</td>
<td>Reptilian diversity I: Testudines</td>
</tr>
<tr>
<td>Feb 15</td>
<td>Reptilian diversity II: Crocodylia + Lepidosauria</td>
</tr>
<tr>
<td>Feb 22</td>
<td>Reptilian diversity III: Lepidosauria, continued</td>
</tr>
<tr>
<td>Mar 1</td>
<td>Field trip</td>
</tr>
<tr>
<td>Mar 8</td>
<td>*** Spring break – no lab ***</td>
</tr>
<tr>
<td>Mar 15</td>
<td>Field trip</td>
</tr>
<tr>
<td>Mar 22</td>
<td>Field trip</td>
</tr>
<tr>
<td>Mar 29</td>
<td>Field trip (starts at 10:50)</td>
</tr>
<tr>
<td>Apr 5</td>
<td>Lab review</td>
</tr>
<tr>
<td>Apr 12</td>
<td>Lab exam</td>
</tr>
<tr>
<td>Apr 19</td>
<td>Field trip (starts at 10:50)</td>
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</tbody>
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## Requirements and Assessment

<table>
<thead>
<tr>
<th>Course component</th>
<th>total points</th>
<th>percent</th>
<th>Grading policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laboratory worksheets (6*x 10)</td>
<td>60</td>
<td>6.7%</td>
<td>A: 93.0-100.0%</td>
</tr>
<tr>
<td>Laboratory quizzes (2 x 40)</td>
<td>80</td>
<td>8.9%</td>
<td>A-: 90.0 - 92.9%</td>
</tr>
<tr>
<td>Laboratory exam</td>
<td>120</td>
<td>13.3%</td>
<td>B+: 87.0 - 89.9%</td>
</tr>
<tr>
<td>Laboratory assignments and participation</td>
<td>100</td>
<td>11.1%</td>
<td>B: 83.0 - 86.9%</td>
</tr>
<tr>
<td>Lecture quizzes &amp; lit. discussions (7*x 15)</td>
<td>105</td>
<td>11.7%</td>
<td>B-: 80.0 - 82.9%</td>
</tr>
<tr>
<td>Research presentation</td>
<td>100</td>
<td>11.1%</td>
<td>C+: 77.0 - 79.9%</td>
</tr>
<tr>
<td>Midterm exam</td>
<td>150</td>
<td>16.7%</td>
<td>C: 73.0 - 76.9%</td>
</tr>
<tr>
<td>Final exam</td>
<td>150</td>
<td>16.7%</td>
<td>C-: 70.0 - 72.9%</td>
</tr>
<tr>
<td>Lecture attendance and participation</td>
<td>35</td>
<td>3.9%</td>
<td>D+: 67.0 - 69.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>900</strong></td>
<td><strong>D-: 60.0 - 62.9%</strong></td>
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<tr>
<td></td>
<td></td>
<td><strong>F: 0.0 - 59.9%</strong></td>
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</tr>
</tbody>
</table>

*Your lowest lab worksheet score (1 of 7) and lowest lecture quiz or literature discussion score (1 of 8, total) will be dropped.*

**Please note:** The material in this syllabus is provided for your information. However, the syllabus is subject to scheduling changes and other alterations as necessary. Any syllabus updates will be announced in class and posted on OAKS.