

Vertebrate Evolution and Ecology (ZOO 4310C)

Spring 2022, Section 0M01, 4 credits

The course calendar can be found at the end of the syllabus

Instructor: Dr. Gregg Klowden (pronounced "Cloud - in")

Office Hours: Where: on Zoom on Webcourses (See link on Webcourses); When – Mon 1:00-2:00p, Wed 12:00-2:00p, or by appointment

E-mail: You may contact me via (A) the email inside Webcourses or (B) your Knights email at gklowden@ucf.edu

I receive a large volume of emails from several courses. To help me help you, you must include:

- + A subject with (A) the course name (FL Ecology) and (B) a brief description of your question (e.g. FL Ecology – Question about swamp lecture)
- + Your first and last names in the message body
- * If your message does not conform to the above guidelines, it may go unanswered or be delayed
- * Due to confidentiality, I will only reply to questions emailed within Webcourses or from your Knights email.
- * I will try to respond to emails within 48 hours however, response time may be greater.
- * Please plan accordingly by not waiting to the last minute to contact me with questions or concerns.
- * Questions about grades must be discussed during office hours or using the Webcourses email.

Graduate Teaching Assistant: Matt Atkinson <msatkinson@knights.ucf.edu>

Class Meeting Times: Officially scheduled for: Lecture – Tuesdays and Thursdays 11:30-12:50; Lab - Thursdays 8:00-11:20

- BUT see schedule for specific dates and times of all lectures, labs, exams, assignments, and activities
- All lectures are prerecorded and available on Webcourses. No lectures will occur in-person.
- All labs, exams, and quizzes are in-person.

Class Location: BSFS 102 (BSFS = Biological Sciences Field Station (aka Biological Field Research Center (BFRC) or Building 92).

Course Prerequisite: BSC 2010C, BSC 2011C, PCB 3044, PCB 3063 with a grade of 'C' or better, or C.I.

Course Description: Vertebrate evolution and ecology, based on the paleontological and ecological literature. The laboratory places heavy emphasis on classification/identification and field research techniques.

Course Outline: Aldo Leopold declared: "There are some who can live without wild things, and some who cannot." This class is for those, like me, who cannot. It will blend natural history and ecological and evolutionary theory with the practical aspects of studying one group of "wild things" - the vertebrate animals. In lecture, we will address the systematics and natural history of all the vertebrates: fishes, amphibians, reptiles, birds and mammals. Lab will be devoted to as much hands-on experience as possible. You will learn some of the methods that biologists use to learn where vertebrates occur, what controls their abundance, how they interact with each other and their environment, etc. The goal is to provide you with some background and experience which will better equip you to begin independent or graduate-level research, to work as a field biologist, or just to become more aware of the "wild things" around you.

Course Objectives:

- * To provide a solid background in vertebrate natural history.
- * To introduce relevant ecological and evolutionary theories, which provide the intellectual underpinning of modern vertebrate biology.
- * To demonstrate the relationship between form and function, habit and habitat.
- * To provide hands-on research experience sampling vertebrates within a local conservation area.

Required Resources:

A. Journal Articles: To obtain PDFs of scholarly articles you must have internet access to the UCF library.

B. Webcourses: Vertebrate Evolution and Ecology is a web-enhanced class. Announcements, lecture notes, grades, study tips, etc. will be made available at this site. Before emailing me, please check this site for answers to frequently asked questions.

Recommended Resources:

Lecture – I use a mixture of the following 2 texts. The Linzey text is more readable.

A. Pough, F. H., C. M. Janis, and J. B. Heiser. 2012. *Vertebrate Life*, 9th Edition. Pearson Benjamin Cummings.

B. Linzey, D. W. 2012. *Vertebrate Biology*, 2nd edition. The Johns Hopkins University Press.

Labs - For lab and field work we will supply the following field guides but I highly recommend them for your own personal library:

- Birds: A. *National Geographic Field Guide To The Birds Of North America*, 7th Edition By Dunn and Alderfer
and/or B. *The Sibley Guide to Birds of Eastern North America*, 2nd edition. 2016. By D. A. Sibley.
C. Phone apps – iBird, Audubon, ebird,

Fishes: D. *Peterson Field Guide To Freshwater Fishes*, 2nd Edition By Page & Burr
 Rept/Amphib: E. *A Field Guide To Reptiles And Amphibians Of Eastern And Central North America*, 4th ed, By Conant & Collins
 F. iPhone app - Audubon Reptiles and Amphibians: A Field Guide to North American Reptiles and Amphibians
 Mammals: G. *Peterson Field Guide To The Mammals Of North America*, 4th Edition By Fiona Reid

Grades: Your final grade should reflect your abilities as a vertebrate zoologist. While a single exam or assignment is not necessarily a good estimator of your ability, a variety of exams and other evaluative tools (including the professional opinion of your instructors) will provide an accurate assessment. Grades do not necessarily measure how hard you've worked, how much you've learned, or even how much you've matured as a biologist, and they certainly do not reflect your value as a person. In college in general, and in this class in particular, there is much to be learned outside the classroom (e.g. in departmental seminars) and you will need to balance your personal goals and aspirations versus grades per se.

Your final grade will be determined by your performance as follows:

Performance Evaluation:	Proportion of grade
Lecture exams - Highest grade	20%
- Middle grade	17%
- Lowest grade	13%
Lab Exams	2 x 15% = 30%
Lab quizzes	5 x 2% = 10%
Merritt Bird ID quiz	2%
Field lab notebooks	4 x 2% = 8%
	100%
Field lab participation**	-5 to +2%

* Assignments are due by 11:59 pm. Late assignments will not be accepted.

** Field lab participation: Your total course grade may be adjusted up 2% or down 5% depending upon the quality of your participation.

Grading Scale

A 93.0 – 100%	B+ 87.0 - 89.9%	C+ 77.0 - 79.9%	D+ 67.0 - 69.9%	F 0 - 59.9%
A- 90.0 - 92.9%	B 83.0 – 86.9%	C 73.0 - 76.9%	D 63.0 – 66.9%	
	B- 80.0 - 82.9%	C- 70.0 - 72.9%	D- 60.0 - 62.9%	

Webcourses is not particularly useful for calculating your grade in this class since each of your exams counts a different proportion of the grade, depending on your performance on each. So, an easy way to address this is by using a grade calculator such as the one at: http://www.benegg.net/grade_calculator.html. This will give you a rough idea of your grade, based on your exam scores. However, it may not predict your exact score due to rounding errors, dropped quizzes, etc.

Final Grade Rounding Policy: The overall semester grade will not be rounded. Either you have the grade or you don't. In other words, a 79.99 is still a 'C+'. No matter where I set the limit, there will ALWAYS be someone who is close to the next grade. As I strive for consistency and fairness there will be no exceptions to this policy and no extra credit or other adjustments will be made.

Student Responsibilities:

Attendance - It is to your advantage to regularly attend lectures and to be on time. Also, out of respect for your peers, please do not disrupt class by being tardy. If this is unavoidable then you should sit near the door to reduce disruption to the class. All cell phones should be turned OFF (not on vibrate) before entering the classroom. Students should not disrupt other students (or the instructor) in class by talking unless instructed to do so by the instructor. Anyone texting during lecture or lab or using her/his computer for reasons not related to class will be asked to leave for the day.

Lab attendance is required. You must arrive on time and remain until excused. **For EACH of the 1st two labs missed your course grade will be reduced by 10% each. If you miss 3 labs you will receive an F for the course.** Similarly, if you arrive late or leave early your grade will be reduced. The ONLY exceptions to this policy are for legitimate, documentable circumstances. Authorized absence must include written documentation from a competent authority (physician, coach, counselor, etc.). Acceptable absences are major illness, serious family emergencies, special curricular or professional requirements (e.g. attending a scientific meeting), court-imposed legal obligations, military obligations, severe weather conditions, religious holidays, and participation in official university-sponsored activities such as intercollegiate athletics. Even if your absences are excused, if you miss 3 or more labs you will receive an F.

It is your responsibility to contact Dr. Klowden prior to or as soon as is possible following an absence. An authorized absence does not excuse you from any missed work. You are individually and entirely responsible for all information, announcements, assignments, and/or handouts that you miss during an absence. Work missed due to unauthorized absence cannot be made up and a grade of zero will be recorded. Work missed due to an authorized absence must be made up or will be assigned a grade of zero. Late assignments will not be accepted.

Lecture Exams – There will be 2 midterm exams and a final exam. The final exam will not be comprehensive and will be a similar format to the midterm exams. Exams will be challenging. To be adequately prepared it is critical that you stay caught up and do not cram at the last minute. The questions will be predominantly short answer essay but may also include multiple choice, fill in the blank and other formats. All questions will pertain to material covered in lectures, but not lab. Bring a #2 pencil with you to each exam. Grades will be posted on *Webcourses* and I will inform the class when they are posted.

Late for the exam policy - If you arrive late for any exam you will be allowed to take the test if no one has yet turned in an exam. However, you must turn in the exam at the regular scheduled end of the test. You will not be allowed extra time unless a documentable emergency has occurred.

Makeup Exam Policy – There will not be any make up exams due to unauthorized absence. If you miss an exam for other than an acceptable absence (see above) your score will be a zero. Makeup exams will not be given to accommodate travel plans. When allowed, makeup exams will be in an essay format.

Labs - Labs are an integral - and FUN! - part of this course and should be taken seriously. The University of Central Florida provides access to a tremendous diversity of prepared slides, preserved specimens and skeletons and supplies vans and equipment for field labs and trips at considerable expense. Please take care with all lab equipment so that it remains in good shape for your peers. **Attendance is mandatory for ALL labs**. Missing a lab, arriving late, or leaving before being dismissed will result in a 10% reduction to your final course grade.

Labs will consist of both indoor and outdoor (field) labs.

Indoor - Students will observe preserved, skeletal and slide specimens and dissect representative specimens within each of the major vertebrate groups. Students will learn the key characteristics used to identify and differentiate groups (e.g. Families) with emphasis being placed on characteristics useful to their identification in the field or museum collections.

Lab Exams – Lab exams will be in a “practical” exam format consisting of a number of stations with 2 questions at each station. You will have 2 minutes to answer the questions and then must move to the next station. You will have 5 additional minutes to briefly return to any desired stations. At each station there will be preserved specimens, dissected specimens, slides, etc. similar to those observed during labs. Questions may ask you to identify the taxonomic group (YES spelling counts so practice, practice, practice!), name which of the specimens shown are most closely related, identify a labeled structure or its function, or something about the ecology of the organism (e.g. its distribution or preferred habitat or food). Answers will generally consist of 1 or 2 words. As there is a good amount of material and a need for near instant recall of the information, it is essential that you spend a substantial amount of time reviewing the material prior to the lab exam.

Lab Quizzes – Lab quizzes are designed to encourage you to stay caught up. It is to your benefit to take these seriously as success on lab quizzes is likely to enhance your chances of success on lab exams. Lab quizzes will require knowledge of the phylogeny, common and scientific names, and other specific details from lab. Specific areas of focus for each quiz will be announced prior to each quiz.

Outdoor: Field labs will include observational trips and will learn techniques used by field ecologists to learn where vertebrates occur, what controls their abundance, and how they interact with each other and their environment. This will include both capture and observation. Handling of live reptiles and amphibians by the students is at the discretion of the instructor. Care must be taken to insure that the animal will not be injured or endangered. **It is forbidden for any student to handle a venomous reptile and may result in a grade of F for the class.** The three U. S. herpetological societies have put together guidelines for the use of live amphibians and reptiles in research and education: <http://www.asih.org/sites/default/files/documents/resources/guidelinesherpsresearch2004.pdf>.

For all outdoor field labs please wear long pants, long sleeves, socks and close toed shoes that can get wet and dirty since you are likely to encounter waist high vegetation, poison ivy, biting insects, rain, mud, etc. and may be wading in the water. If you have something to do after this lab you may want to bring a change of clothes. Labs will occur rain or shine unless the weather is severe. So, please bring a rain coat on rainy days. Be on time for lab as we will leave promptly. Don't be late or you will miss your ride (and receive an unexcused absence)! Absolutely, positively no personal vehicles are allowed on field trips.

List of **required** and recommended equipment to bring to each outdoor lab:

1. **Water** - bring plenty (i.e. not just 1 small bottle) as we will be outdoors in the sun for many hours.
2. **Long** pants, long sleeves, socks and **close toed** shoes that can get wet and dirty
3. Hat
4. Sunblock
5. Insect repellent
6. First aid kit - band-aids, antibiotic ointment, tweezers, alcohol swabs, etc.
7. Bee sting kit if allergic to bee stings
8. Other personal medications – allergy, headache etc.
9. Lunch and snack
10. Your field notebook and pencils
11. Camera and binoculars (each student will be issued binoculars but bring your own if you have a preferred set)
12. Watch
13. Hand towel
14. Backpack

Field notebooks: Detailed field notes are an extremely valuable part of natural history collections. They are used extensively for museum research, conservation, and management. For example, the distribution and abundance of plants and animals changes over time, due to natural causes as well as human-mediated impacts on the environment. By looking back at field notes from 100 years ago, we can accurately document the changing status of biodiversity in a given area.

You should maintain a field notebook in which you make notes before, during, and after field labs. Include instructions, notes, data, results, descriptions, pictures, graphs, sketches, and anything else that may act as a detailed record of all you observe or think while in the field. At first when you're learning to identify animals, you won't know what you're looking at. In that case, you should describe the animal as best you can. Once you've learned to positively identify a species, it isn't necessary to repeat the description each time you make a new account of that species. All results and observations should be written directly in the notebook and temporary notes should not be made on random pieces of paper. Mistakes in the lab notebook should be crossed out with a single line. You may find that this information is needed at a later time and if scribbled or whited out will be unreadable.

To facilitate accurate note keeping, a waterproof Write-in-the-rain notebook will be supplied for you. You should only use a pencil to write since pens generally smear if they get wet. Notebooks should be kept up to date and should be completed while in the field since recall of important details at a later date will be greatly reduced.

While the exact style and entries of a field notebook vary substantially between individuals, each day's work should include the following sections and data:

- A. Date – I prefer the format DD MMM YYYY (e.g. 12 Jan 2012) since 1/6/12 could mean Jan 6 or June 1.
- B. Times – I prefer 24 hour format (e.g. 13:00 to 15:30 h) rather than am and pm.
- C. Weather – temp, cloud cover, rain etc.
- D. Researchers names – e.g. "Vertebrate Evolution class" or for completeness/ future reference you may want to include specific names.
- E. Location – Precise description and GPS coordinate if available.
e.g. Econlockhatchee Sandhills Conservation Area, 15227 Lake Pickett Road, Orlando, Orange County, Florida 32816, Latitude 28.587672°N, Longitude 81.155791° W
- F. General location description (e.g. habitat, topography, important features, etc.)
- G. Activities – General description of what you did.
- H. Data – either directly written into notebook or transcribed from datasheets (indicate if transcribed).
 - i. A list of individuals and species seen or captured
 - ii. Time (e.g. 14:35 h) each was seen/ captured
 - iii. Where each individual was located (Description and GPS point if possible)
 - iv. Habitat description where encountered (e.g. In oak/pine forest w/ dense palmetto, on slash pine trunk, 1 m off ground)
 - v. What it was doing or how it sounded (e.g. was eating a frog).
 - vi. Measurements taken (e.g. body dimensions or weight)(If applicable)
 - vii. Description (e.g. color, pattern, external parasites observed etc.)
 - viii. Specimen and/or location sketches (optional)
- I. Other observations and descriptions – e.g. location, equipment, or technique descriptions, sketches, or maps
- J. Overall summary and comments – Good opportunity to recap the day, what went well, what did not, things to change to remember for next time, etc.

For more hints on keeping a field notebook see the attachment at the end of this syllabus.

Field notebook assignments submissions:

Submissions should include 2 files:

- 1) a single PDF copy of the appropriate pages from your field notebook;
- 2) a completed Excel data sheet for the individual animals you personally saw (If you like, for a more a complete record you may also include ones others in the group saw, being sure to note the actual observer). Download the Excel data sheet template from the "Outdoor Labs" page on Webcourses. It is hoped that you are able to complete all of the information for each observation however if this is not possible, complete as much information as you have written in your lab notebook. The data sheet should be a running list that combines all of your observations from all field days. For example, your 2nd submission should also include the lines from your 1st submission and your 3rd submission the lines from your 1st and 2nd. At the top of the Excel template are some example lines. You may erase these if you like.

Due dates and times can be found in the course schedule.

Lab Participation:

I expect you to have a good attitude and to be active participants in the learning process. This not only means that you are present in all labs but that you are prepared and actively work to improve your understanding of the subject. Ask questions and seek answers both alone and in conjunction with your classmates. In the field you will quickly discover that working outdoors trying to collect ecological data is a challenging endeavor that is generally enjoyable but can at times be uncomfortable, exhausting and monotonous. Please try to keep a good attitude and help your classmates whenever possible. In addition to the learning benefits that active participation will bestow upon you, it will also be reflected in your grade. Dr. Klowden and the TA will observe and evaluate your preparedness, general attitude, and enthusiasm in all labs. Your grade may be reduced if it is deemed that your participation is particularly poor.

Optional assignments – Optional assignments are not extra credit however like extra credit can boost your grade. As opposed to extra credit, which can be neutral or help your grade, optional assignments can benefit your grade IF you do a good job but could hurt your grade if you do a poor job. I design it this way as a way to encourage you to take the assignment seriously and to do a good job and to avoid you turning in a hastily prepared assignment in hopes of getting a point or two. However, do not be dissuaded from doing this in fear of receiving poor credit. If you take the assignment seriously, you will receive full credit and it will benefit you. Just be sure to take it seriously and do a good job. Optional assignments are due by 11:59 pm on the date shown in the schedule below. You may however turn them in earlier if you choose. They should be submitted via the appropriate link on Webcourses. Late assignments will not be accepted for any reason.

- 1. Book Review** – This assignment is OPTIONAL (see above). If you choose to do this, it will replace 3% of the value of your lowest lecture exam grade (e.g. reducing it from 13% to 10% of your grade). If you choose, pick an ecology themed book of at least 250 pages or more to read and write a **750-1000 word** summary report demonstrating that you read the entire book and your understanding and opinions of the book. This should be similar in style to the format of the journal article reviews (see below). Approved books are listed below. Other books must 1st be approved by Dr. Klowden. Reviews should be for this class only and not a book used in another class. Summaries must be entirely your own work. Plagiarism will not be tolerated and will result in a failing grade for the course or expulsion from UCF. All reviews will be submitted to Turn-it-in to check for plagiarism so be certain that ALL words are your own. Unless absolutely essential, quotations should be avoided. I reserve the right to orally quiz you about the book if I suspect you have not read it.

Books approved for review are:

The Beak of the Finch by Jonathan Weiner
Voyage of the Beagle by Charles Darwin
On the Origin of Species by Charles Darwin
Diversity of Life by E.O. Wilson
Song of the Dodo by David Quaman (excellent!)
The Reluctant Mr. Darwin by David Quammen
Boilerplate Rhino by David Quammen
How and Why Species Multiply by P. Grant and R. Grant
A Stillness in the Pines by Robert McFarlane
Built By Animals by Mike Hansell

Ever Since Darwin by Stephen Jay Gould
What Evolution Is by Ernst Mayr
The Selfish Gene Richard Dawkins
The Greatest Show on Earth Richard Dawkins
The Extended Phenotype by Richard Dawkins
Evolution's Rainbow Joan Roughgarden
Amazon Expeditions by Paul Colinvaux
Your Inner Fish by Neil Shubin
Winter World by Bernd Heinrich
Bird Song by Don Stap

- 2. Journal Article Review(s)** – This/these assignment(s) is/are OPTIONAL (see above). You may do up to 2 journal article reviews. If you choose to do this, each will replace 2.5% of the value of your lowest lab exam grade (e.g. reducing it from 15% to 12.5% of your grade if you do one, or from 15% to 10% if you do two).

From the list at the end of the syllabus, choose a journal article to review. Your review should be 750-1000 words in length, no more, no less.

Summaries must be entirely your own work. All reviews will be submitted to Turn-it-in to check for plagiarism so be certain that ALL words are your own. When taking notes it is recommended to place any copied material in quotes or highlight it to be sure you avoid using other people's writing in your final summary. Material should be paraphrased and unless absolutely essential, quotations should be avoided. You are encouraged to discuss the articles with classmates however discussion is where it should end. In other words be sure each of you writes a completely original review. Plagiarism will not be tolerated and will result in a failing grade for the course or expulsion from UCF.

Your reviews should include 6 distinctly labeled sections:

- 1) *Article Citation* - An initial identification of the article (author, title of article, title of journal, year of publication).
- 2) *Summary* - A brief summary of the range, contents and argument of the article. You may summarize section by section but since the review is short it may better to pick up the main themes only. This section should not normally take up more than 1/3 of the total review.
- 3) *Discussion* - A critical discussion of 2-3 key issues raised in the article. This section is the core of your review. In this portion you should discuss the originally assigned article including what was particularly well done and what was not (e.g. methods or conclusions you disagree with or think were analyzed poorly and why, what was explained poorly, what is missing, etc.). Use other, perhaps more recent, journal articles to support your arguments for what you liked or didn't like and why. For example you might say that a more recent study contradicts certain findings, or that methods they used were improper and that another study addressed this more appropriately, or that the conclusions they drew were inappropriate

and that another study highlights this incongruity. Be sure to make clear the author's own argument before you criticize and evaluate it and remember that it is seldom useful to criticize a writer for not doing something they never intended to do.

- 4) *Final evaluation* – A brief discussion of the overall contribution the article has made to your understanding of the topic (and maybe its importance to the development of knowledge in this particular area or discipline, setting it in the context of other writings in the field).
- 5) *Additional citations* – Citations of other journal articles referenced in your discussion.
- 6) *Word count* - Number of words from your summary section (Can easily be automatically counted in Microsoft Word).

Academic Integrity:

Why should I care?

Beyond moral considerations, academic dishonesty diminishes the quality and value of a UCF education. If prospective employers, graduate schools, etc. have a poor perception of UCF, it undermines the value of your education and decreases your likelihood of advancement. If you are aware of academic dishonesty it is important to report it as quickly as possible. Otherwise you risk devaluation of your degree and hard work. Non-reporting is also considered academic dishonesty.

What should you do if you are aware of another student cheating?

You should contact Dr. Klowden <gklowden@ucf.edu> in private as soon as possible after the incident has occurred. Your reporting will remain confidential.

What is considered academic dishonesty?

Students should familiarize themselves with UCF's Rules of Conduct at <http://osc.sdes.ucf.edu/process/roc>.

According to Section 1, "Academic Misconduct," students are prohibited from engaging in:

- *Unauthorized assistance*: Using or attempting to use unauthorized materials, information or study aids in any academic exercise unless specifically authorized by the instructor of record. The unauthorized possession of examination or course-related material also constitutes cheating.
- *Communication to another through written, visual, electronic, or oral means*: The presentation of material which has not been studied or learned, but rather was obtained through someone else's efforts and used as part of an examination, course assignment, or project.
- *Commercial Use of Academic Material*: Selling of course material to another person, student, and/or uploading course material to a third-party vendor without authorization or without the express written permission of the university and the instructor. Course materials include but are not limited to class notes, Instructor's PowerPoints, course syllabi, tests, quizzes, labs, instruction sheets, homework, study guides, handouts, etc.
- *Falsifying or misrepresenting the student's own academic work*.
- *Plagiarism*: Using or appropriating another's work without any indication of the source, thereby attempting to convey the impression that such work is the student's own.
 - Turning in someone else's work as your own.
 - Copying words or ideas from someone else without giving credit.
 - Failing to put a quotation in quotation marks.
 - Giving incorrect information about the source of the information.
 - Changing words but copying the sentence structure of a source.
 - Copying so many phrases from a source that it makes up a substantial part of your work, even if you give credit.

Plagiarized work is easily detected and university regulations on academic misconduct will be strictly enforced.

- *Multiple Submissions*: Submitting the same academic work more than once without written permission of the instructor.
- *Helping another violate academic behavior standards*.

For more information about Academic Integrity, consult the International Center for Academic Integrity <http://academicintegrity.org>

For more information about plagiarism and misuse of sources, see "Defining and Avoiding Plagiarism: The WPA Statement on Best Practices" <http://wpacouncil.org/node/9>

Unauthorized Use of Websites and Internet Resources

There are many websites claiming to offer study aids to students, but in using such websites, students could find themselves in violation of academic conduct guidelines. These websites include (but are not limited to) Quizlet, Course Hero, Chegg Study, and Clutch Prep. UCF does not endorse the use of these products in an unethical manner, which could lead to a violation of our University's Rules of Conduct. They encourage students to upload course materials, such as test questions, individual assignments, and examples of graded material. Such materials are the intellectual property of instructors, the university, or publishers and may not be distributed without prior authorization. Students who engage in such activity are in violation of academic conduct standards and could face course and/or University penalties. Please let me know if you are uncertain about the use of a website so I can determine its legitimacy.

If you need assistance, I recommend you visit me during my office hours and make use of the Student Academic Resource Center (SARC), the University Writing Center (UWC), the Math Lab, etc.

If you are aware of others engaging in such activity or find materials from my classes posted on these sites, I would appreciate your bringing this to my attention. We all play a part in creating a course climate of integrity.

Unauthorized Use of Technology for Graded Work

If you were in a classroom setting taking a quiz, would you ask the student sitting next to you for an answer to a quiz or test question? The answer should be no. This also applies to graded homework, quizzes, tests, etc. Students are not allowed to use GroupMe, WhatsApp, or any other form of technology to exchange course material associated with a graded assignment, quiz, test, etc. when opened on Webcourses. The completion of graded work in an online course should be considered a formal process: Just because you are not in a formal classroom setting being proctored while taking a quiz or test does not mean that the completion of graded work in an online course should not be treated with integrity.

The following are some examples of what is considered academic misconduct. This is certainly not an all-inclusive list and there are many other possible ways to be in violation.

- Taking a screen shot of an online assignment, posting it to GroupMe or WhatsApp, and asking for assistance.
- Answering, giving advice, assistance, or suggestions on how to complete an online assignment or assessment that is posted to GroupMe or WhatsApp.
- The use of outside assistance from another student or by searching the internet, Googling for answers, use of websites such as Quizlet, Course Hero, Chegg Study, etc.
- Gathering to take an online quiz or test with others and sharing answers in the process.

Responses to Academic Dishonesty, Plagiarism, or Cheating

Students should also familiarize themselves with the procedures for academic misconduct in UCF's student handbook, The Golden Rule <<http://goldenrule.sdes.ucf.edu/docs/goldenrule.pdf>>. UCF faculty members have a responsibility for students' education and the value of a UCF degree, and so seek to prevent unethical behavior and when necessary respond to academic misconduct. Penalties can include a failing grade in an assignment or in the course, suspension or expulsion from the university, and/or a "Z Designation" on a student's official transcript indicating academic dishonesty, where the final grade for this course will be preceded by the letter Z. For more information about the Z Designation, see <http://goldenrule.sdes.ucf.edu/zgrade>.

Course Accessibility Statement:

The University of Central Florida is committed to providing access and inclusion for all persons with disabilities. Students with disabilities who need disability-related access in this course should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <http://sas.sdes.ucf.edu/> (Ferrell Commons 185, sas@ucf.edu, phone 407-823-2371). Through Student Accessibility Services, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential access and accommodations that might be reasonable. Determining reasonable access and accommodations requires consideration of the course design, course learning objectives and the individual academic and course barriers experienced by the student.

Campus Safety Statement

Emergencies on campus are rare, but if one should arise during class, everyone needs to work together. Students should be aware of their surroundings and familiar with some basic safety and security concepts.

- In case of an emergency, dial 911 for assistance.
- Every UCF classroom contains an emergency procedure guide posted on a wall near the door. Students should make a note of the guide's physical location and review the online version at <http://emergency.ucf.edu/emergency_guide.html>.

- Students should know the evacuation routes from their classrooms and have a plan for finding safety in case of an emergency.
- If there is a medical emergency during class, students may need to access a first-aid kit or AED (Automated External Defibrillator). To learn where those are located, see <<https://ehs.ucf.edu/automated-external-defibrillator-aed-locations>>.
- To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <<https://my.ucf.edu>> and logging in. Click on “Student Self Service” located on the left side of the screen in the toolbar, scroll down to the blue “Personal Information” heading on the Student Center screen, click on “UCF Alert”, fill out the information, including e-mail address, cell phone number, and cell phone provider, click “Apply” to save the changes, and then click “OK.”
- Students with special needs related to emergency situations should speak with their instructors outside of class.
- To learn about how to manage an active-shooter situation on campus or elsewhere, consider viewing this video <https://youtu.be/NIKYajEx4pk>.

Deployed Active Duty Military Students:

Students who are deployed active duty military and/or National Guard personnel and require accommodation should contact their instructors as soon as possible after the semester begins and/or after they receive notification of deployment to make related arrangements.

UCF Cares:

During your UCF career, you may experience challenges including struggles with academics, finances, or your personal well-being. UCF has a multitude of resources available to all students. Please visit UCFCares.com if you are seeking resources and support, or if you are worried about a friend or classmate. Free services and information are included for a variety of student concerns, including but not limited to alcohol use, bias incidents, mental health concerns, and financial challenges. You can also e-mail ucfcares@ucf.edu with questions or for additional assistance. You can reach a UCF Cares staff member between 8 a.m. and 5 p.m. by calling 407-823-5607. If you are in immediate distress, call 407-823-2811 to speak with a counselor at Counseling and Psychological Services 24/7 or call 911.

Knights Pantry

The Knights Helping Knights Pantry is committed to serving UCF students by providing basic needs including food, clothing, and personal hygiene items to foster continued academic success and increase retention for students in need. Access to the Knights Pantry is reserved for UCF Students who present a valid Student ID upon entry. Students are limited to 5 food items per day. There is currently no limit for toiletries or clothing.

Location: Ferrell Commons, Room 7H - 101 // Phone: 407-823-3663 // Hours: Mon-Fri: 10am-6pm, Sat. 12pm-5pm

The Knights Pantry relies on the support of students, faculty, and staff. Donations of food, toiletries, or clothing (business professional or casual) can be dropped off at the Pantry in Ferrell Commons or to one of our many donation boxes around campus. Campus donation boxes can be found on the UCF Mobile app maps. In addition to tangible donations, the Knights Pantry accepts monetary donations to ensure food is available when demand is high. Also, the Pantry would not be able to keep its doors open without the help of student volunteers, so consider volunteering.

Notifications in Case of Changes to Course Modality

Depending on the course of the pandemic during the semester, the university may make changes to the way classes are offered. If that happens, please look for announcements or messages in Webcourses@UCF or Knights email about changes specific to this course.

COVID-19 and Illness Notification

Students who believe they may have COVID-19 should contact UCF Student Health Services (407-823-2509) so proper contact tracing procedures can take place. Students should not come to campus if they are ill, are experiencing any symptoms of COVID-19, have tested positive for COVID, or if anyone living in their residence has tested positive or is sick with COVID-19 symptoms. CDC guidance for COVID-19 symptoms can be found at: <https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html>

Students should contact their instructor(s) as soon as possible if they miss class for any illness reason to discuss reasonable adjustments that might need to be made. When possible, students should contact their instructor(s) before missing class.

In Case of Faculty Illness

If the instructor falls ill during the semester, there may be changes to this course, including having a backup instructor take over the course. Please look for announcements or mail in Webcourses@UCF or Knights email for any alterations to this course.

SCHEDULE (subject to change as necessary)

Week	Dates	Lecture and Lab Topics	Exam, quiz, assignment due*
1	Lectures	Introduction LECTURE 1 – Systematics refresher LECTURE 2 – Vertebrate evolutionary origins & general characteristics	
	Th JAN 13	FIELD LAB 1 – Introduction / Bird id (9:00a)	
2	Lectures	LECTURE 3 – Jawless vertebrates and intro to jawed vertebrates LECTURE 4 – Living in Water	
	Th JAN 20	FIELD LAB 2 - Field Trip to Merritt Island National Wildlife Refuge (8:00a)	F 1/21 Lab notebook 1 (by 11:59p)* (From Field labs 1 and 2)
3	Lectures	LECTURE 5 – The Chondrichthyes (Sharks, rays, etc.)	
	Th JAN 27	INDOOR LAB 1 – Fishes (8:00a)	Th 1/27 Lab quiz 1 (Fishes)
4	Lectures	LECTURE 6 – The Osteichthyes (Fishes) LECTURE 7 – Rhipidistia	
	Th FEB 3	INDOOR LAB 2 – Amphibians (8:00a)	Th 2/3 Lab quiz 2 (Amphibians)
5	Lectures	None	
	Tu FEB 8	LECTURE EXAM 1 (Lectures 1-7) – 11:30a	Tu 2/8 Lecture Exam 1
	Th FEB 10	FIELD LAB 3 – Tosohatchee Wildlife Management Area (8:00a)	F 2/11 Lab notebook 2 (by 11:59p)*
6	Lectures	None	
	Tu FEB 15	Lab Exam Review + Practice Lab Exam – 10:00a	
	Th FEB 17	LAB EXAM 1 (Fishes and Amphibians) – 11:00a	Th 2/17 Lab Exam 1
7	Lectures	LECTURE 8 – Origin and Radiation of Tetrapods LECTURE 9 – Salamanders, Anurans and Caecilians	
	Th FEB 24	INDOOR LAB 3 – Non-avian reptiles (8:00a)	Th 2/24 Lab quiz 3 (Reptiles)
8	Lectures	LECTURE 10 – Origin of the Amniotes LECTURE 11 – Introduction to Diapsids LECTURE 12 – The Lepidosaur: Tuatara, Lizards, and Snakes	
	Th MAR 3	INDOOR LAB 4 – Birds (8:00a)	Th 3/3 Lab quiz 4 (Birds)
	MAR 7-11	Spring Break - No Classes	
9	Lectures	LECTURE 13 – Archosaurs – Basal and Crocodylians (on Exam 3)	
	Tu MAR 15	LECTURE EXAM 2 (Lectures 8-12) – 11:30a	Tu 3/15 Lecture Exam 2
	Th MAR 17	FIELD LAB 4 – Econlockhatchee Sandhills Preserve (8:00a)	F 3/18 Lab notebook 3 (by 11:59p)*
10	Lectures	LECTURE 14 – Archosaurs – Turtles LECTURE 15 – Archosaurs – Dinosaurs (including birds)	
	Th MAR 24	INDOOR LAB 5 – Mammals (8:00a)	Th 3/24 Lab quiz 5 (Mammals)
11	Lectures	LECTURE 16 – Birds - Avian specializations LECTURE 17 – The Synapsida and the Evolution of Mammals	
	Th MAR 31	Lab Exam Review + Practice Lab Exam (9:00a)	
12	Lectures	None	
	Tu APR 5	LAB EXAM 2 (Non-avian reptiles, birds, mammals) – 11:30a	Tu 4/5 Lab Exam 2
	Th APR 7	FIELD LAB 5 – Econlockhatchee Sandhills Preserve (8:00a)	
13	Lectures	LECTURE 18 – Mammalian Diversity and Characteristics	
	Th APR 14	FIELD LAB 6 – Econlockhatchee Sandhills Preserve (8:00a)	
14	Lectures	LECTURE 19 – Mammalian Specializations	
	Th APR 21	FIELD LAB 7 – Econlockhatchee Sandhills Preserve (8:00a)	F 4/22 Lab notebook 4 (by 11:59p) (From Field labs 5-7)*
15	Mo APR 25	-----	Mo 4/25 Optional assignment(s) due**
Finals	Th APR 28	LECTURE EXAM 3 (Lectures 13-19) – 10:00a	Th 4/28 Lecture Exam 3

*Assignments are due by 11:59 pm. A 10% penalty will be incurred for each day late.

**Optional assignments may not be turned in late, under any circumstance.

"I'm a great believer in luck, and I find the harder I work the more I have of it."

-Thomas Jefferson

Dr. Klowden reserves the right to modify the syllabus as needed. Students will be informed of changes.

Optional Journal Articles

- Aguirre, Windsor E., Kaitlyn E. Ellis, Mary Kusenda And Michael A. Bell. 2008. Phenotypic variation and sexual dimorphism in anadromous threespine stickleback: implications for postglacial adaptive radiation. *Biological Journal of the Linnean Society* 95:465–478.
- Burke AC, CE Nelson, BA Morgan, and C Tabin. 1995. Hox genes and the evolution of vertebrate axial morphology. *Development* 121:333-346.
- Estes, JA, et al. 2011. Trophic Downgrading of Planet Earth. *Science* 333:301-306.
- Grant, Peter R. and B. Rosemary Grant. 2002. Darwin's Finches Unpredictable Evolution in a 30-Year Study of Darwin's Finches. *Science* 296:707-711.
- Grant, Bruce W. 1990. Trade-offs in activity time and physiological performance for thermoregulating desert lizards, *Sceloporus merriami*. *Ecology* 71: 2323-2333.
- Holland, Nicholas D. and Junyuan Chen. 2002. Origin and early evolution of the vertebrates: new insights from advances in molecular biology, anatomy, and palaeontology. *BioEssays* 23:142-151.
- Lamb, Trevor D., Shaun P. Collin, and Edward N. Pugh, Jr. 2007. Evolution of the vertebrate eye: opsins, photoreceptors, retina and eye cup. *Nature Reviews Neuroscience* 8:960-976.
- MacArthur, Robert H. 1958. Population ecology of some warblers of northeastern coniferous forests. *Ecology* 39:599-619.
- McCollum, S.A. and J.D. Leimberger. 1997. Predator-induced morphological changes in an amphibian: predation by dragonflies affects tadpole shape and color. *Oecologia* 109:615-621.
- Murphy, William J., Eduardo Eizirik, Warren E. Johnson, Ya Ping Zhang, Oliver A. Ryderk, and Stephen J. O'Brien. 2001. Molecular phylogenetics and the origins of placental mammals. *Nature* 409:614-618.
- Rayner, Jeremy M. V.. 1988. The evolution of vertebrate flight. *Biological Journal of the Linnean Society* 34:269-287.
- Satoh, Noriyuki and William R. Jeffery. 1995. Chasing tails in ascidians: developmental insights into the origin and evolution of chordates. *Trends in Genetics* 11:354-359.
- Schwenk, Kurt. Why Snakes Have Forked Tongues. *Science* 263:1573-1577.
- Vitt, Laurie J., Eric R. Pianka, William E. Cooper, Jr., and Kurt Schwenk. 2003. History and the global ecology of squamate reptiles. *The American Naturalist* 162:44-60.

Keeping a Field Notebook

Excerpt from: "Practical Field Ecology: A Project Guide" by C. Philip Wheeler, Penny A. Cook, James R. Bell

Use a field notebook to write down data, ideas, observations, tentative conclusions and hypotheses as you do your fieldwork to create an immediate and faithful history of your research. Produce comprehensive, clearly organized notes as a reference and so that you can reconstruct the research time-line and follow the development of your thoughts and ideas. Although you may use other collection sheets (e.g. pre-printed data collection forms to ensure data are collected consistently in different locations and at different times), your field notebook should provide the context for data collection and help resolve ambiguities or inconsistencies when preparing for analysis. After data analysis, reference to your notebook may generate further hypotheses and suggest further lines of enquiry.

What should be recorded?

The first page should include contact details in case of loss, the subject of your research and the start and end dates of the period covered by that notebook. Include any conventions used, for example 'All times are recorded as local time'. Number the pages and ideally add a contents table to make searching for information easier. Write on the right hand page only so the left hand page can be used for ideas generated by reading about similar observations or relevant research papers. Leave a few lines between observations for comments to be inserted later (e.g. 'No bark damage here 23 June, see p39'). Add a 2 cm margin to write the time, location (e.g. from a GPS reading) or other identifying labels. Create lists of codes, acronyms, specialist terminology, etc. at the back include any emergency numbers (e.g. those of field buddies). Other useful notes about equipment (how to use, limitations of instruments etc.) and any numerical information you might require in the field (simple formulae for calculations, random numbers, etc.) can also be added here.

Before starting each work day, write down the date, weather, general location, nature of the habitat and purpose of the day's work. Write down any changes in weather or habitat that occur during the day, for example 'At 15.00 hours snow began to fall and visibility was reduced to 20 m'. When observing behavior note the sampling method, how animals were chosen for observation and the recording method (e.g. whether you noted all occurrences or used a time-sampled method). If animals or start times are chosen at random, note how this was done.

Note the type and model number of any equipment (e.g. GPS receiver type Garmin 12). Some instruments need calibrating at intervals, so record the time of calibration and any raw data and subsequent calculations so that any arithmetic errors can be identified and corrected later. Use your notebook to create rough species accumulation curves, etc so you can tell when you should stop collecting data. Along with observations, note the time and if possible, the location from a GPS receiver. Although notes should be made at the time observations are made, it may be difficult to observe and write at the same time, but if you do rely on memory, you should note this. Write exactly what you see or hear, for example when describing behaviour do not ascribe a function to it in the guise of a description (i.e. do not write that a goose was vigilant when you mean that the bird was in a standing posture with an elongated neck and raised head).

Sketches enhance any photographs you take of your study sites and you will have a sketch available in your notebook the next time you visit the area. Sketches can be added subsequently (annotating any changes with the date of the amendment). The value of sketches can be increased by explanatory labels. A careful sketch can aid species identification and will help to jog your memory when you encounter a species in the future; such sketches are more valuable if labeled with the diagnostic feature(s) you use (e.g. 'two spots on forewing' or 'sepals reflexed'). Landscapes change over time and maps may not reflect this. In some cases no map of a suitable scale may be available and a sketch map can be made using compass and tape, or by pacing out distances using a pedometer. This may be adequate to note the locations of those animals or plants of interest.

It is also useful to record any notes and actions from supervisory team meetings both as a reminder and to ensure that any designated actions have been completed as planned.