Course Syllabus  
PCB 49/325937  
GIS For Biologists

**INSTRUCTOR INFORMATION**

Instructor: **Dr. Kristy A. Lewis**  
Office Location: Research 1-343  
Virtual Office Hours: Monday 10:00AM - 10:45AM   
[https://ucf.zoom.us/j/3680865799 (Links to an external site.)](https://ucf.zoom.us/j/3680865799)

Graduate Teaching Assistant:  **Michelle Shaffer**  
Virtual Office Hours: Tuesday 10:00AM - 11:00AM

[https://us02web.zoom.us/j/83467663927?pwd=VlgrVmFTSGpWOUQyYWsrRWo3V29KQT09 (Links to an external site.)](https://us02web.zoom.us/j/83467663927?pwd=VlgrVmFTSGpWOUQyYWsrRWo3V29KQT09)  
Meeting ID: 834 6766 3927  
Passcode: 6swkcZ

**COURSE COMMUNICATION**

All course communication should be sent via:  [gis4biologists@gmail.com](mailto:gis4biologists@gmail.com)

This account will be checked at 4PM everyday M-F. Students may NOT communicate with the professor or TA in any other manner unless discussed personally with Dr. Lewis.

**COURSE INFORMATION**

Term:  Fall 2020  
Credit Hours: 3  
Class Meeting Day/Time: MW 11:00AM – 12:20PM  
Class Location: Remote  
Course Modality: V  
[Course Schedule (Links to an external site.)](https://docs.google.com/spreadsheets/d/15HhNmDqdxakfe014dicWB4KT4cRGPuz8YjOTbvNrZvA/edit?usp=sharing)

**COVID-19 and Illness Notification**

Students who believe they may have a COVID-19 diagnosis 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 is located here: ([https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html (Links to an external site.)](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.

**COURSE DESCRIPTION**

Geographic Information Science (GIS) has emerged as a powerful data visualization and analysis discipline. This course investigates how GIS is currently being used to better understand and address environmental problems and to help manage and conserve natural resources. We will discuss the basic and current applications of GIS in an environmental, biological and ecological context. We will use real biological and ecological GIS data sets to learn the basic, intermediate and some advanced applications of GIS. Specific topics include but are not limited to: climate change, biodiversity, habitat management, and water resource use. Students will conduct their own independent research and work on case studies relevant to their interests. Through this course, students will also strengthen their ecology “tool box:” presentation skills, discussion skills, and their ability to interpret scientific literature and think critically.

**COURSE MATERIALS AND RESOURCES**

[MacLeod, Colin. (2015). GIS for Biologists: A practical introduction for undergraduates. ISBN: 978-0-909832-17-6  (Links to an external site.)](https://www.amazon.com/GIS-Biologists-Practical-Introduction-Undergraduates/dp/1909832170/ref=sr_1_1?keywords=GIS+for+Biologists&qid=1566826016&s=gateway&sr=8-1)(Click link to purchase on amazon)

**ArcGIS 10.x** software (evaluation copy from ESRI) will be provided at the class. You will be able to install this software on your computer or access ArcGIS through UCF Apps via the Azure cloud computing platform.

**ZOOM**

Because of the continued remote instruction requirement due to the COVID-19 pandemic, this course will use Zoom for some synchronous (“real time”) class meetings. Meeting dates and times will be scheduled through Webcourses@UCF and should appear on your calendar.

Please take the time to familiarize yourself with Zoom by visiting the [UCF Zoom Guides](https://cdl.ucf.edu/support/webcourses/zoom/) at <https://cdl.ucf.edu/support/webcourses/zoom/>. You may choose to use Zoom on your mobile device (phone or tablet).

Things to Know About Zoom:

* You must sign in to my Zoom session using your UCF NID and password.
* The Zoom sessions are recorded.
* Improper classroom behavior is not tolerated within Zoom sessions and may result in a referral to the Office of Student Conduct.
* You can contact [Webcourses@UCF Support](https://cdl.ucf.edu/support/) at <https://cdl.ucf.edu/support/webcourses/> if you have any technical issues accessing Zoom.

**STUDENT LEARNING OUTCOMES**

1. Describe uses of GIS in ecology and biology
2. Identify GIS concepts and how these are used to gather, manage, quality check, process, analyze, model, and interpret environmental spatial data
3. Identify environmental spatial data needed for particular tasks used in their careers
4. Learn how to use social media as a professional resource
5. Develop, analyze, and produce products that examine a real-world environmental issue of interest for a final project.
6. Demonstrate an understanding of Geographic Information Systems.
7. Demonstrate ability to 'think spatially'.
8. Demonstrate a solid understanding of the technical, scientific, and organizational aspects of a GIS project management.
9. Identify the major components of ArcGIS and what they are used for.
10. Demonstrate an understanding of standard spatial data formats used in GIS.
11. Demonstrate an understanding of common GIS data structures such as vector and raster.
12. Understand the importance of coordinate systems in GIS.
13. Be able to work with tables within a GIS.
14. Perform attribute and spatial queries.
15. Demonstrate an understanding of how spatial data sets can be combined and compared to help solve, visualize and analyze biological and ecological data.
16. Demonstrate an understanding of common data entry methods like geocoding, digitizing and editing data.

**TIPS FOR SUCCESS**

The following expectations will help you be successful in this course. Please carefully review these expectations and follow them.

1. Take advantage of synchronous elements of the course. Let me help you when you get stuck!
2. Keep up with the weekly readings and assignments. Students who keep up with the weekly reading and assignments tend to do much better in courses than those who do not.
3. Please do not miss an assignment deadline. Refer to the course schedule/calendar to ensure that you submit assignments on time.
4. Remember that academic integrity will be appraised according to the student academic behavior standards outlined in The [Golden Rule of the University of Central Florida’s Student HandbookLinks to an external site.](http://goldenrule.sdes.ucf.edu/).

**DISCUSSION AND PARTICIPATION**

***Students are expected to be active participants in the learning process, especially in an online platform.*** Each student is expected to read the assigned text and other assigned materials and be prepared to discuss them in via FlipGrid or during synchronous class meetings. Class exercises assigned need to be accomplished and turned in on time.**Late submissions will not be accepted unless legitimate hardship can be shown.** The software employed for the course exercises will be ESRI® ArcGIS 10.x software. The Desktop software can also be accessed via apps.ucf.edu and will also be available for installation on the student’s home computer should that be desired, keycodes will be made available by the instructor. We will also be exploring ArcGIS Online, a cloud-based resource requiring only a browser. There will be a synchronous lab once per week so that students will have direct access to the instructor to ask questions while completing assignments. Students should plan on spending a substantial amount of time each week working on labs, projects, and with ArcGIS in general.  ***The only real way to learn how to use this software is by practicing, making mistakes, and learning how to work through challenges.***

**Teamwork Makes the Dream Work**

Have you ever heard the saying, "It takes a village"?  This saying holds true when attempting to not only learn the new software associated with GIS but also in becoming a geospatial thinker. This course will require you to work together to solve problems and I highly encourage you to do so.

**VIRUSES AND REDUNDANCY**

A virus can spell disaster. Your use of a reputable anti-virus program is a requirement for participation in this course. [AVG (Links to an external site.) (Links to an external site.)](https://www.avg.com/en-us/free-antivirus-download) is a great, free antivirus program. [Malwarebytes (Links to an external site.) (Links to an external site.)](http://www.malwarebytes.org/) is a great anti-malware program

Back up your files using [One Drive Links to an external site.](http://www.cst.ucf.edu/wp-content/uploads/OneDrive-in-Office-365.pdf)in Office365, Google Drive or Dropbox. Technical issues can and will happen. These problems do occur and are inconvenient, however, they are not a valid excuse for failing to get your work in on time. **In 2020, the days of carrying around a flash drive should be over--if you store all your documents on a cloud-based server, you will always have your documents and they will always be backed up and safe.**

**TECHNICAL RESOURCES**

* [Webcourses@UCF SupportLinks to an external site.](http://online.ucf.edu/support/)provides technical support for students taking courses at UCF.
* [Knights Online:Links to an external site.](http://online.ucf.edu/learn-online/knights-online/)Resources specific for online activity including Webcourses@UCF tutorials.

**A CULTURE OF MUTUAL RESPECT**

​I have a zero-tolerance policy for disrespect, injustice, or any form of oppression in this course. With your help, I aim to create a safe classroom space for all who inhabit it, where we are free to make mistakes in the pursuit of knowledge, and where we can trust each other to be a part of a supportive community. Please do your part!

The University of Central Florida considers the diversity of its students, faculty, and staff to be a strength and critical to its educational mission. UCF expects every member of the university community to contribute to an inclusive and respectful culture for all in its classrooms, work environments, and at campus events. Dimensions of diversity can include sex, race, age, national origin, ethnicity, gender identity and expression, intellectual and physical ability, sexual orientation, income, faith and non-faith perspectives, socio-economic class, political ideology, education, primary language, family status, military experience, cognitive style, and communication style. The individual intersection of these experiences and characteristics must be valued in our community.

Title IX prohibits sex discrimination, including sexual misconduct, sexual violence, sexual harassment, and retaliation. If you or someone you know has been harassed or assaulted, you can find resources available to support the victim, including confidential resources and information concerning reporting options at [www.shield.ucf.eduLinks to an external site.](http://www.shield.ucf.edu/) and [http://cares.sdes.ucf.edu/Links to an external site.](http://cares.sdes.ucf.edu/).

If there are aspects of the design, instruction, and/or experiences within this course that result in barriers to your inclusion or accurate assessment of achievement, please notify the instructor as soon as possible and/or contact Student Accessibility Services.

For more information on diversity and inclusion, Title IX, accessibility, or UCF’s complaint processes contact:

* Title IX – OIE – [http://oie.ucf.edu/Links to an external site.](http://oie.ucf.edu/) & [askanadvocate@ucf.edu](mailto:askanadvocate@ucf.edu)
* Disability Accommodation – Student Accessibility Services – [http://sas.sdes.ucf.edu/Links to an external site.](http://sas.sdes.ucf.edu/) & [sas@ucf.edu](mailto:sas@ucf.edu)
* Diversity and Inclusion Training and Events – [www.diversity.ucf.eduLinks to an external site.](http://www.diversity.ucf.edu/)
* Student Bias Grievances – Just Knights response team – [http://jkrt.sdes.ucf.edu/Links to an external site.](http://jkrt.sdes.ucf.edu/)
* UCF Compliance and Ethics Office – [http://compliance.ucf.edu/Links to an external site.](http://compliance.ucf.edu/) & [complianceandethics@ucf.edu](mailto:complianceandethics@ucf.edu)
* Ombuds Office – [http://www.ombuds.ucf.eduLinks to an external site.](http://www.ombuds.ucf.edu/)

**COURSE ACTIVITIES**

**Tweets**

As a class, we will collectively host an @UCFBioGIS Twitter account. This account will facilitate current issues discussions at the beginning of some class periods.  Students will be required to Tweet two times throughout the semester and present their Tweet in a recorded 2-min lightning presentation. Details will be provided on a specific link on [webcourses@UCF](mailto:webcourses@UCF).

**Modules, Exercises, Labs, Quizzes**

During this semester we will have various modules, exercises within modules, labs, and quizzes. These tasks are designed to understand the capabilities and techniques used in biological and ecological applications of GIS.

**Final GIS Project**

Students will conduct an independent research that will include the following components: (a rubric will be provided)

1. A project proposal
2. A question, hypothesis or problem statement
3. A description of data used
4. A step-by-step description of the methodology employed, also, list number and type of GIS tools you used (You must use a minimum of 3 tools)
5. The results in a graphic and/or tabular form
6. Your evaluation of the analysis, including how it could be improved
7. A final oral presentation to the class
8. References

**Assignment Submissions**

For each module, exercise or quiz, I will provide specific details in [webcourses@ucf](mailto:webcourses@ucf) on how to submit those assignments***.***

**Attendance/Participation**

Students are encouraged to attend any synchronous sessions of the course.  These times will never deviate from the M-W 11-12:20PM class times.  I will record all those sessions and post them to webcourses for those that cannot attend. Of course, attending synchronous sessions to increase learning for the student.

**Make-up Exams and Assignments**

Per university policy, you can submit make-up work (or an equivalent, alternate assignment) for university-sponsored events, religious observances, or legal obligations (such as jury duty). If this participation conflicts with your course assignments, I will offer a reasonable opportunity for you to complete missed assignments and/or exams. **Otherwise, there will be no make-up assignments, make-up tests, or make-up presentations if you miss the due date of the assignment.**

**ASSESSMENT AND GRADING PROCEDURES**

|  |  |
| --- | --- |
| **Assignments** | Points (U/G) |
| Tweets | 50/50 |
| Quizzes | 50/50 |
| ESRI Tutorial/MacLeod Exercises | 220/220 |
| Tool Tutorial (Grad Only) | NA/50 |
| Mid-Term | 100 |
| Discussion | 50 |
| Final Project | 150/200 |
| Final Exam | 100 |
| **TOTAL POINTS** | 720/820 |

Policy Statements

Academic Integrity

Students should familiarize themselves with UCF’s Rules of Conduct at <[https://scai.sdes.ucf.edu/student-rules-of-conduct/Links to an external site.](https://scai.sdes.ucf.edu/student-rules-of-conduct/)>. According to Section 1, “Academic Misconduct,” students are prohibited from engaging in:

1. 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.
2. 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.
3. 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.
4. Falsifying or misrepresenting the student’s own academic work.
5. 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.
6. Multiple Submissions: Submitting the same academic work for credit more than once without the express written permission of the instructor.
7. Helping another violate academic behavior standards.
8. Soliciting assistance with academic coursework and/or degree requirements.

**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* <[https://goldenrule.sdes.ucf.edu/Links to an external site.](https://goldenrule.sdes.ucf.edu/)>. UCF faculty members have a responsibility for students’ education and the value of a UCF degree, and so seek to prevent unethical behavior and respond to academic misconduct when necessary. Penalties for violating rules, policies, and instructions within this course can range from a zero on the exercise to an “F” letter grade in the course. In addition, an Academic Misconduct report could be filed with the Office of Student Conduct, which could lead to disciplinary warning, disciplinary probation, or deferred suspension or separation from the University through suspension, dismissal, or expulsion with the addition of a “Z” designation on one’s transcript.

Being found in violation of academic conduct standards could result in a student having to disclose such behavior on a graduate school application, being removed from a leadership position within a student organization, the recipient of scholarships, participation in University activities such as study abroad, internships, etc.

Let’s avoid all of this by demonstrating values of honesty, trust, and integrity. No grade is worth compromising your integrity and moving your moral compass. Stay true to doing the right thing: take the zero, not a shortcut.

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 access to course content due to course design limitations should contact the professor as soon as possible. Students should also connect with Student Accessibility Services (SAS) <[http://sas.sdes.ucf.edu/Links to an external site.](http://sas.sdes.ucf.edu/)> (Ferrell Commons 185, [sas@ucf.edu](mailto:sas@ucf.edu), phone 407-823-2371). For students connected with SAS, a Course Accessibility Letter may be created and sent to professors, which informs faculty of potential course access and accommodations that might be necessary and 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. Further conversation with SAS, faculty and the student may be warranted to ensure an accessible course experience.

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.htmlLinks to an external site.](http://emergency.ucf.edu/emergency_guide.html)>.
* Students should know the evacuation routes from each of 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-locationsLinks to an external site.](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.eduLinks to an external site.](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 (Links to an external site.)](https://youtu.be/NIKYajEx4pk)>).

**Campus Safety Statement for Students in Online-Only Courses**

Though most emergency situations are primarily relevant to courses that meet in person, such incidents can also impact online students, either when they are on or near campus to participate in other courses or activities or when their course work is affected by off-campus emergencies. The following policies apply to courses in online modalities.

* To stay informed about emergency situations, students can sign up to receive UCF text alerts by going to <[https://my.ucf.eduLinks to an external site.](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.

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.

Make-Up Assignments for Authorized University Events or Co-curricular Activities

Students who represent the university in an authorized event or activity (for example, student-athletes) and who are unable to meet a course deadline due to a conflict with that event must provide the instructor with documentation in advance to arrange a make-up. No penalty will be applied. For more information, see the UCF policy at [https://policies.ucf.edu/documents/4-401.pdf.Links to an external site.](https://policies.ucf.edu/documents/4-401.pdf)

Religious Observances

Students must notify their instructor in advance if they intend to miss class for a religious observance. For more information, see the UCF policy at [http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdfLinks to an external site.](http://regulations.ucf.edu/chapter5/documents/5.020ReligiousObservancesFINALJan19.pdf)

Copyright

This course may contain copyright protected materials such as audio or video clips, images, text materials, etc. These items are being used with regard to the Fair Use doctrine in order to enhance the learning environment. Please do not copy, duplicate, download or distribute these items. The use of these materials is strictly reserved for this online classroom environment and your use only. All copyright materials are credited to the copyright holder.

Third-Party Software and FERPA

During this course you might have the opportunity to use public online services and/or software applications sometimes called third-party software such as a blog or wiki. While some of these could be required assignments, you need not make any personally identifying information on a public site. Do not post or provide any private information about yourself or your classmates. Where appropriate you may use a pseudonym or nickname. Some written assignments posted publicly may require personal reflection/comments, but the assignments will not require you to disclose any personally identity-sensitive information. If you have any concerns about this, please contact your instructor.