# NR 322 - Introduction to Geographic Information Systems
## SYLLABUS - Fall 2018
### Department of Ecosystem Science and Sustainability | Warner College of Natural Resources

## COURSE DETAILS

**Instructor:** **Elizabeth Tulanowski**
Office hours: Monday 10am – 12pm, NESB A126B | Wed. 2 – 3pm, Natural Resources 232 computer lab
**Office Hours may change, or "lab time with the instructor" may be added. Stay tuned in lecture for updates.**
Email: *E.Tulanowski@colostate.edu*

**Teaching Assistant: Sarah Carroll**
Office hours: Friday 12pm – 2pm in Natural Resources 232 lab or by appointment
Email: *Sarah.L.Carroll@colostate.edu*

**Scheduled Class Meeting times:**

| | | |
|---|---|---|
| Lecture | M / W 9:00am – 9:50am | Microbiology A101 |
| Lab Section 1 | W 12:00pm – 1:50pm | Natural Resources 232 |
| Lab Section 2 | Th 12:00pm – 1:50pm | Natural Resources 232 |
| Lab Section 3 | F 10:00am – 11:50am | Natural Resources 232 |
| Lab Section 4 | W 10:00am – 11:50am | Natural Resources 232 |
| Optional Open Lab Time / Sarah's office hours | F 12:00 – 2:00pm | Natural Resources 232 |

**NOTE:** You will need to work on lab exercises outside of the scheduled lab time. Plan to spend 2-4 hours per week completing assignments, depending on how fast you work.

**NOTE:** Lab exercises can be done in the Natural Resources computer labs, through remote desktop, or by installing the software on your own Windows computer. Details below.

**Course Description (official)**
Fundamental concepts of spatial data handling and computer-assisted map analysis.

**Course Objectives**
This course is designed to introduce students to geographic information systems (GIS), a complex system of software, hardware, and data that allows for the creation, storage, analysis, and display of spatial (geographic) data. The purpose of the course is threefold, to:

1) Examine the broad context in which GIS is used;
2) Understand core concepts of GIS and spatial data such as data models, coordinate systems, and analysis techniques;
3) Gain hands-on experience using GIS software and methods to manipulate spatial data and solve spatial problems

## COURSE MATERIALS

**Required Text: Paul Bolstad, GIS Fundamentals, 5th Edition**.
This software-agnostic text provides a good overview and necessary detail of the concepts we will be covering in this course. Available digitally or in print from the campus bookstore, Xanedu or Amazon.

Additional readings may be assigned, as shown in the Schedule handout. These readings will be available online.

> ***Note:*** Some materials provided in this course are drawn, with permission, from course materials prepared by Drs. Randall Boone and Michael Falkowski.

**Software**
This course will use **ArcGIS Pro v. 2.2** for nearly all the lab exercises.
How to access the software:

- Natural Resources building – computer labs in Room 107A and the 232 classroom
- Use Remote Desktop: Go to the WCNR IT page and click on Remote PC Lab Access for instructions. (It works really well! This is a great option.)
- Install the software on your own Windows computer (Not a Mac)
    - 1-year free trial versions –may- be available from the instructor- check for details.
    - Contact RamTech for a 1-year license for $36

## COURSE COMPONENTS

Lectures

- The 50-minute lectures on Monday and Wednesday will focus on concepts and theory, and offer demonstrations of the uses of GIS, software demos, instructional videos and interactive learning activities.
- Lecture slides will be posted to Canvas, but if you miss lecture, you will miss out on the additional learning opportunities presented in class. So **come to lecture!**
- Attendance will not be officially taken, but will occasionally be recorded by submitting activities during lecture. This will count toward your participation grade.

Exercises

- Labs are designed to give you hands-on experience with the software, applying the concepts presented in lecture to solve spatial problems. Lab exercises will be a combination of **step-by-step activities and self-directed activities**. As the semester goes on, you will be expected to do more on your own with less "hand-holding."
- **Labs will be due by the beginning of lab the following week**. Late lab assignments will not be accepted without a documented, valid excuse.

Exercises (cont'd)

- Lab exercises are meant to be done during your scheduled lab time, but depending on how fast you work, you may not complete it by the end. It is your responsibility to complete the lab exercise by the due date, on your own time.
- Lab exercises will be **submitted to Canvas as a PDF map or as a Word document** (depending on the lab).
- The lowest lab grade will be dropped from the final grade. 10 lab assignments will be included in the final grade.
- You are expected to take good notes in a **lab notebook**. Not only will this be a good reference for you, but the act of writing down your steps and processes will help you better remember the material. The lab notebook will be checked periodically and counts toward your **participation** grade.

Exams

- The lecture component of the course will have a **midterm** (Oct. 3rd) and a **final exam** (Dec. 13th).
- The lab component of the course will have **2 lab projects**, as indicated in the Schedule handout. The projects, completed and submitted during the scheduled lab time, will have you work through some spatial tasks with little to no instruction to assess your practical GIS skills.

Quizzes

- Six short **online quizzes** will be given throughout the semester, as indicated in the Schedule handout. Quizzes are open-book, and administered through Canvas.

"Extra-curriculars"

Education is more than just what you learn in the classroom. Throughout the semester you will be required to complete or attend 2 activities outside of the classroom.

- These activities will include things like:
    - Read an article and write up a summary
    - Complete an online GIS lesson
    - Attend a GIS event: Mapathon, Seminar, GIS Day, workshop, webinar, Meetup, GIS in the Rockies Conference
- You may do a third for extra credit.

A detailed handout on this will be available soon.

**NOTE:**

A computer account on the Natural Resources network is required for the course. *If you are not a student in the Warner College – you likely do not have a Warner account. You can get one on the first day of lab or from the WCNR IT page*

## IMPORTANT DATES

| | |
|---|---|
| Classes begin | Monday, Aug. 20th |
| Labor Day – No Class | Monday, Sept. 3rd |
| Last day to drop without record entry | Wednesday, Sept. 5th |
| NR 322 Midterm | Wednesday, Oct. 3rd (In class) |
| Lab Project #1 | In Lab Oct. 10/11/12 |
| Last day to Withdraw with a "W" | Monday, Oct. 15th |
| Fall Recess / Thanksgiving – No classes | Nov. 17 - 23 |
| Lab Project #2 | In lab Nov. 28/29/30 |
| Last day of classes | Friday, Dec. 7th |
| NR 322 Final Exam | Thursday, Dec. 13th, 4:10 – 6:10 pm<br>Microbiology A101 |

## EXPECTATIONS

**Expectations of Me:**

My goal is to teach you the fundamentals of GIS and provide ample opportunity to become proficient with GIS software and solving simple spatial problems.

- I will teach using up to date materials and offer relevant examples from the geospatial industry.
- I will strive to help you understand the concepts and am happy to provide extra help when necessary, but sometimes the best learning is done through some struggle – so you'll have to "figure it out" sometimes too!
- Exams and assignments will be graded within a week or 2 of the due date. I will typically respond to emails by the next day.

**Expectations from You:**

- **Attend lecture and lab**. Come to class having read the assigned text, ready to discuss the content, or ask questions to facilitate better understanding.
- **Be engaged**. You will get out of this course what you put into it.
- Complete assignments on time.
- Adhere to the **academic code of conduct.**
- **Communicate**. Contact the instructor or TA if you are having trouble (ie, understanding the material, keeping up with assignments, issues with a classmate).
- Be **respectful** of others. We can all learn from one another's stories, backgrounds, and ideas.
- **Help each other** when appropriate. Within the limits of the code of conduct, help each other out, study together, explain a difficult concept to a classmate who doesn't get it. Learn from each other, teach each other.

**GRADING**

| Category | Description |
|---|---|
| **Laboratory exercises 30%** | 11 hands-on exercises using GIS software to reinforce the basics and perform spatial analysis. The lowest lab grade will be dropped. |
| **Quizzes 12%** | 6 short online, open-book quizzes through Canvas to periodically test your understanding of the readings and lectures. Refer to the Schedule handout for dates. |
| **Lab projects 20%** | Self-directed, hands-on lab projects to assess students' understanding of techniques covered in laboratories. Two projects, 10% each. Completed in lab during Weeks 8 and 15. Refer to Schedule handout for dates. |
| **Mid-term exam 10%** | A mid-term exam will assess your understanding of core concepts. In lecture, Wed. Oct. 3rd |
| **Final exam 15%** | A final exam will assess your understanding of core concepts. Scheduled for Thursday, Dec. 13th, 4:10pm – 6:10pm |
| **Class participation 8%** | Students are expected to raise questions, complete lecture exercises, and participate in discussions. In-lecture activities and your lab notebook will also count towards your class participation grade. |
| **Extra-curriculars 5%** | GIS related activities to complete or attend outside of regular class time. You must do 2, 2.5% each. |

Final grades will be assigned using the following CSU grading scheme:

| Grade | Score | Course Credit |
|---|---|---|
| A | 93-100 | 4.0 |
| A- | 90-92 | 3.7 |
| B+ | 87-89 | 3.3 |
| B | 83-86 | 3.0 |
| B- | 80-82 | 2.7 |
| C+ | 77-79 | 2.3 |
| C | 70-76 | 2.0 |
| D | 60-69 | 1.0 |
| F | 0-59 | 0 |

## POLICIES

**Attendance Policy and Participation:** Students are expected to attend lectures regularly. If you are forced to miss a lecture, the slides will be posted afterward informing you of what you have missed. However, those visuals will not include demos or discussions that occurred during lecture. Writing materials should be brought to lecture to take notes or complete any learning activities.

**Professionalism:** Per university policy and classroom etiquette; mobile phones, iPods, etc. must be silenced during all classroom and lab lectures. Those not heeding this rule may be asked to leave the classroom/lab immediately so as to not disrupt the learning environment. Please arrive on time for all class meetings. Students who habitually disturb the class by talking, arriving late, etc., and have been warned may suffer a reduction in their final class grade.
When emailing the instructor or TA, please include your full name, CSU ID, and the course number in your email.

**Late assignments / Make-up work:** Late assignments and quizzes will not be accepted without a valid written excuse. If you must miss class, please arrange with a classmate to get the notes, or complete the lab assignment early. If you must miss an exam, please arrange with the instructor ahead of time to take it prior to the scheduled time. This is the responsibility of the student.

**Special Needs:** Any student who needs special accommodations or has special needs is encouraged to speak with me about those needs within the first two weeks of the semester.

**Academic Responsibility:** All work in this course must be completed in accordance with the CSU academic honesty policy (http://catalog.colostate.edu/front/policies.aspx). Plagiarism or failing to meet the academic honesty policy in other ways will result in dismissal from class and will be reported. **By participating in this course, you agree to abide by the following honor pledge, "I will not give, receive, or use any unauthorized assistance in this course."**

**Need Other Help?**
CSU is a community that cares for you. Counseling Services has trained professionals who can help. Contact 970-491-6053 or go to http://health.colostate.edu. "Tell Someone" by calling 970-491-1350 to discreetly discuss your concerns (http://safety.colostate.edu/tell-someone.aspx ).