ENR 3700: Spatial Technologies in Natural Resource Management Stone Lab 2023

WELCOME

This syllabus provides a tentative schedule and the best summarizations of course policies to date. This schedule and policies may require further clarification or it may be necessary to change them. If there is to be a change, it will be announced in lecture and posted to Carmen.

Course Format: THIS IS STONE LAB!!! All are in-person. Each lecture will use power point slides. The slides will be made available to you prior to lecture when possible. Labs will follow largely with lecture materials. Attendance for the lecture, though not mandatory, will be checked and recorded, but attendance for the lab times will be MANDATORY. Laboratory attendance will be checked in the middle of lab. If you need to leave early for a special circumstance, please let the instructor(s) know ahead of time so that you will not be marked absent. If you leave early, you are responsible for completing the assignment.

Instructors:

H. Alexis Londo londo.4@osu.edu, Mobile 614-495-6738,

Meeting Days and Times:

See the calendar at the end of this syllabus.

Credit Hours: 3

This course is divided into **2 lectures and 1 lab each time we meet UNLESS OTHERWISE NOTED.**

This will mimic the 14 weeks we use in the fall and spring semesters. Students are expected to keep pace with lab deadlines (most labs are due prior to the following lab session – some labs will span /multiple lab sessions) but may schedule their efforts freely within that time frame. If you fallbehind due to technical issues, compensation for due dates will be made. (Just ask for help and keep me informed. The only ones who have failed this class are those that do not finish the assignments)

Credit hours and work expectations: This is a **3-credit-hour course**. According to Ohio State policy, students should expect around 3 hours per week of time spent on direct instruction (instructor content and Carmen activities, for example) in addition to 6 hours of homework (reading and assignment preparation, for example) to receive a grade of (C) average. This is for a normal 14 week semester. This course is condensed into 4 weeks. Valiant efforts are made to make the assignments from lab doable within the allotted lab time.

Prerequisites: None

Exclusions: Not open to students with credit for ENR 3750.

Textbooks/Readings: No textbooks are required for this course. There will be a few assigned readings.

Optional Texbooks/Readings:

GIS Fundamentals: A First Text on Geographic Information Systems
Author: Paul Bolstad
Publisher: Eider Press; 4th Edition (2012) ISBN-13: 978-0971764736

Remote Sensing and Image Interpretation
Authors: Thomas Lillesand, Ralph W. Kief, Jonathan ChapmanPublisher: Wiley;
6th edition (2007)
ISBN-13: 978-0470052457

Additional Required Materials: You will need a computer with adequate storage for the course material. We will discuss the downloading of the software necessary to complete this course on the first lecture day. All the software necessary for this class is free. Links will be provided on the Carmen page for you to safely and securely download the software.

Other Fees or Requirements:

None

Course Description:

Introduction to methods of collecting and utilizing spatial information (GIS, RS and GPS) for Environmental and Natural Resources management. This introductory course in spatial information for natural resources and environment presents the basic concepts and vocabulary of spatial information systems and geospatial technologies, particularly in the context of environmental management. During this course, we will examine spatial information systems, remote sensing and aerial imagery, GPS systems for spatial location, spatial modelingand methods for assessment of temporal change in natural and managed ecosystems. Students will learn how to access use a variety of spatial data including map data, digital aerial photography and high-resolution satellite imagery in conjunction with geographic information systems (GIS), digital elevation models (DEMs), and GlobalPositioning Systems (GPS) to solve problems in the natural resources.

There will be a basic introduction to traditional paper-based maps and aerial photos. However, the emphasis is on computer based interpretation, measurement, and analysis of digital vertical imagery, and integration with other spatial data. The central goal is to teach students how to use a wide range of data in GIS software, as would be expected, for many jobs (private and public) in natural resources management. Basic geographic and cartographic principles such as resolution, distortion, and map scale will be introduced. Studentswill learn to make professional quality maps for presentations and reports using Geographic Information Systems.An introduction to basic non-digital interpretation techniques using paper aerial photographs will be provided. We will learn techniques to capture and analyze information from digital imagery for use in modern GIS software.An introduction to the wide range of problems in the natural and environmental resources where spatial data areuseful will be discussed. Applications of spatial information in a variety of natural resource management scenariosincluding agriculture, forestry, wildlife, wetlands and aquatic systems, urban and other highly disturbed systemswill be introduced, Students will learn how to identify a wide range of natural and anthropogenic features in aerialimagery and to make basic measurements for natural resources inventory and land use change.

The basic skills needed to use air photos, multi-band satellite imagery, and digital elevation models within geographic information systems (QGIS, Google Earth, ArcGIS) will be practiced. Students will be introduced to public sources for free digital vertical imagery to use in this class and future work.

Goals:

Students will gain an understanding of the principles, theories, and methods used in geospatial information (GIS), remote sensing (RS) and global positioning systems (GPS). Students will be introduced to the criteria for and practice of spatial data acquisition, organization and applications (including GIS, RS, and GPS), the implications of readily available spatial information and the potential of science and technology to address problems of the contemporary world.

Topic/Day Schedule – Tentative (Weather or Pace of Class may Cause Changes Or a Boat Becomes Available to have a Field Trip Before the 18th)

Tuesday	Thursday	Saturday
4	**6**	**8**
8:30-9:45 Introduction ICE BREAKER 10:15-11:30 Computer distribution and software installation 1-2:30 Mapmaking Lecture 2:45 – 4:45 Lab I WILL ALWAYS BE AVAILABLE FROM 6:30 to 9:00 either in my office or by text message	8:30-9:45 Introduction 10:15-11:30 Map Making 1-4:30 Lab 2 Assignment 1 Will be given	8:30-9:45 Introduction to Spatial 10:15-11:30 Data Models Lab 3 – I will not be available and there will not be a specified time to be in the lab. I will be back on Monday to help with any questions or you can text me Sunday or Monday 614-495-6738
11	**13**	**15** Row Boats
8:30-9:45 EMS 10:15-11:30 EMS 1-2:15 - Data Models 2:30-4:45 Lab 4	8:30 - 10:00 Vector and Raster Operations 10:15-11:30 Resolution 1-4:30 Lab 4 Continued	8:30-9:45 Midterm 10:15-11:30 GEOREFERENCING 1-4:30 Lab 6
18 Field Trip	**20** Field Trip	**15**
8:30-12:00 Field Trip Kellys Island 1-4:30 Lab 9 6:30 -9:00 Tentative Catch Up	8:15 -12:00 Field Trip on Boat all morning 1-4:30 Lab 5	8:30-10:00 GIS Applications 10:15- 11:30 Image Interpretation 1-4:30 Lab 8 6:30 -9:00 Tentative Catch Up
25	**27** Field Trip	**29**
8:30-9:45 Final Project - classification 10:15-11:30 classification 1-4:30 Lab 7 6:30 -9:00 Final Project	8:30-9:45 Lidar 10:15 - 4:00 - Geocaching PutInBay	8:30-9:45 Final Project Presentation 10:15-11:30 Final Project Presentation 1-3:30 Final - Normal 1 hour and 45 minute final….take as long as you need

Instructor's policy on late or make up work:

Assignments are due at the beginning of class or lab period. Late assignments will result in a 15%reduction in possible points from which to start the grading for each day the assignment is late. You must have email consent from the instructor to turn in assignments late without penalty. This must be dated before the assignment is due. Late assignments will only be accepted up to 7 days after the date for which the assignment was originally due.

If you will be unable to take an exam, arrangements to make up an exam must be made by email at least 3 days prior to the exam and be documented by email confirmation. If you miss an exam and have not made arrangements before the exam period you will not be able to make up the missed exam except in extreme circumstances and with the approval of the professor.

Testing

All exams are open book open note exams and will be given online. YOU MUST TAKE THEM IN THE CLASSROOM DURING THE ASSIGNED TIME ON THE LOANED COMPUTER. If you have SLDS accommodations, those will be honored.

Evaluation:

Task	Percentage of Grade:
Weekly Laboratory	40%
Assignments	15%
Thursday Lectures and Symposiums	5%
Midterm	15%
Final Exam/Final Project (Cumulative)	25%
TOTAL	100%

ANYTHING NOT LABELED A LAB OR EXPLICITLY DESIGNATED AS A FINAL PROJECT WILL BE CONSIDERED AN ASSIGNMENT.

LAB ASSIGNMENTS:
You will submit all the required assignments through Carmen. They will be evaluated using a rubric. Grades and feedback will be available generally before the next lab is due.

EXAMS:
Both the midterm and final exam are open note open book but must be completed without any external help or communication. The exam date for the midterm is July 15, 2023. It will only be available during the class time on CARMEN. The FINAL exam will be given during the time assigned per the university's calendar. There WILL BE A FINAL EXAM scheduled on July 29, 2023.

Midterms and exams consist of fill in the blank (a word bank with the answers as well as some additional words will be provided), short answer questions such as specific definitions, and 2 to 3 discussion questions. The midterm is designed to take 55 minutes while the final is designed to be 1 hour and 45 minutes.

Grading Scale: The standard grading scale is below.

Percentage	Grade	Percentage	Grade
93-100	A	73-76.9	C
90-92.9	A-	70-72.9	C-
87-89.9	B+	67-69.9	D+
83-86.9	B	60-66.9	D
80-82.9	B-	<60	E
77-79.9	C+		

COURSE POLICIES

Faculty feedback and response time

We are providing the following list to give you an idea of our intended availability throughout the course.(Remember that you can call **614-688-HELP** at any time if you have a technical problem.)

- **Grading and feedback:** For Each lab assignment you should receive feedback by the next class period, but no later than 2 class periods.
- **E-mail:** We will reply to e-mails within generally within 24 hours. If no response please try again or for urgent or unanswered emails, please text Dr. Londo 614-495-6738 between the hours of 7:00 am and 10:00 pm. Most questions are computer related and will require me to use teamviewer or anydesk to access your screen. From here we will be able to answer your question and get you going again.

Learning Outcomes:

Students will gain an understanding of the principles, theories, and methods used in geospatial information (GIS), remote sensing (RS) and global positioning systems (GPS). Students will be introduced to the criteria for and practice of spatial data acquisition, organization and applications (including GIS, RS, and GPS), the implicationsof readily available spatial information and the potential of science and technology to address problems of the contemporary world.

Expected Learning Outcomes:

1. Students will develop a basic understanding of the nature and representation of geographic data; specifically, students understand the basic facts, principles, theories and methods of spatial information management as related to GIS, RS andGPS technologies.
2. Students explore examples of the interdependence of scientific and technological developments and management of theEarth's resources.
3. Students will learn interpretation and measurement techniques used to create extract, and manipulate information fromvarious data types inherent to GIS, RS and GPS technologies.
4. Students discuss social and philosophical implications of scientific discoveries and understand the potential of scienceand technology to address problems of the contemporary world, particularly environmental issues, food security, and human health.

Specific Learning Outcomes:

1. Students understand the nature of spatial information of the environment
2. Students explore various technologies for data acquisition and organization
3. Students learn about important spatial information forms and representations
4. Students examine the role of spatial information and systems in understanding and managing natural resources
5. Students learn about methods for assessing environmental change

Learning goals and objectives will be satisfied through a sequence of lectures, field trips, computerlab exercises and demonstrations, and online presentations

Course technology

For help with your password, university e-mail, Carmen, or any other technology issues, questions, or requests, contact the OSU IT Service Desk. Standard support hours are available at OCIO Help Hours, and support for urgent issues is available 24x7.

- **Self-Service and Chat support:** (http://ocio.osu.edu/selfservice)
- **Phone:** 614-688-HELP (4357)
- **Email:** 8help@osu.edu

- **TDD:** 614-688-8743

Baseline technical skills for online courses

- Basic computer skills such as file structure, file types, and common functions such as copying, pasting, downloading, saving etc. will be needed. Additionally, web-browsing skills will also be necessary.
- Navigating Carmen: for questions about specific functionality, see the Canvas Student Guide.

Technology skills necessary for this specific course

- Zoom text, audio, and video chat
- Recording a slide presentation with audio narration
- Recording, editing, and uploading video

Required equipment

- Computer supplied to you by OSU OCIO.