Instructor: Jacob Callister (682-4114), jcallister@lcog.org

Lecture/Lab Session:
Time: Monday through Thursday, 4:00 pm-5:50 p.m.   Location: Virtual

COURSE OBJECTIVE:
Designed for students who are newcomers to the field of GIS. Topics covered in this class include history of GIS, data types, formats and sources, map design and visualization techniques, projection, spatial analysis techniques, and ethical and societal issues. It will introduce students the basic application of GIS in areas of environmental, demographic, suitability and transportation-related research. By completing this course, students will:
- Gain a basic, practical understanding of GIS concepts, technical issues, and applications using ArcGIS.
- Develop spatial and quantitative analysis skills to effectively analyze issues in a variety of planning settings, and
- Understand the limitations of GIS and its social implications.

REQUIRED TEXTBOOK:

- **[E-GIS]** Campbell, J. and M. Shin. Essentials to Geographic Information System (2011), Saylor Foundation. ISBN: 978-1-4533219-6-6. Available at: **https://open.umn.edu/opentextbooks/BookDetail.aspx?bookId=67**

OPTIONAL TEXTBOOK:

- **[GTKArcGIS]** Law, M. and A. Collins. 2015 Getting to know ArcGIS for Desktop (for ArcGIS 10.2 and 10.3) 4th Edition. Environmental Systems Research Institute (ESRI) Press.

COURSE STRUCTURE:

A. Lab work

In a typical summer term of this class, there is a two-hour lab session every day.
COVID 19 restrictions have necessitated virtual learning. All labs will be pre-recorded and made available at least several days prior to the first day dedicated to that lab. Students will be expected to go through the pre-recorded lab on their own. I plan to host a Zoom (or similar platform) meeting every Monday and Wednesday 4-6 pm. The first 15 minutes of these sessions will be dedicated to key class updates or answers to frequently occurring questions. The balance of the sessions will be dedicated to individual sign-up sessions. **Attendance at a minimum of 80% of the beginning fifteen minutes of each daily session is required. You re also required to sign up for (and attend) a minimum of three personal conferences during the term (you can sign up for more as space as availability allows).**

I can sometimes be available outside of this window, but I will be hesitant to provide assistance outside of these times (particularly if you are not choosing not to participate in the available lab sessions).

There are six lab assignments and they are designed to help students become acquainted with GIS skills and theories. Most lab assignments mimic a realistic planning-related issue that can be addressed using GIS analysis and publicly available data.

There are two quizzes during the term (one at mid-point and one at the end). These quizzes help assess the level of GIS proficiency. The quizzes are open-book and open-source, meaning students can use any materials that they consider helpful. Students are expected to work on a quiz independently.

B.   Course Software Access and Formal Communication

Students will be able to access ArcGIS software in the following ways (ArcGIS Desktop ~ ArcMap 10.5 or 10.7 – NOT ArcGIS Pro):

1. *The University (through the SSIL Lab) provides remote access to ArcGIS software through virtual computers. https://ssil.uoregon.edu/ssil/vm/*
   This is available to Mac or PC platforms.
   Some additional GIS assistance is available through the SSIL Lab's virtual help desk: https://ssil.uoregon.edu/gis/
   In the two virtual terms of this class that have recently been conducted, this method has seemed the preferred option for accessing the software, as it seems to be the most accessible and user-friendly approach.

2. *If you have a PC computer then you can install ArcGIS directly on your laptop or desktop. Attached is a guide for that installation. Many students (with PCs) have also had good luck with this approach.*

3. *Mac users CAN partition their hard drive to run Windows software with resources like "Boot Camp." This has not been common in the past, but I have known students to do it.*

More information on these approaches will be provide closer to our first day and in our first class meeting.

Students can use any materials that they consider helpful. Students are expected to work on a quiz independently

The class will be managed online through **Canvas** (A link will be sent to students with basic enrollment instructions, if needed). Canvas will provide access to key class documents, including lab assignments, this syllabus and other resources.

Completed lab assignments will be submitted through Canvas.

Lab data will also be conveyed through Canvas. In the past students have relied on a shared network drive for saving and accessing GIS data. Some of this functionality can be preserved through access to the UO VPN:
https://service.uoregon.edu/TDClient/2030/Portal/KB/ArticleDet?ID=31471

After consultation with other GIS instructors who have recently conducted similar remote GIS courses, I have decided to enable and encourage students to download and access the data on their own computers (downloading necessary data from Canvas).

The functionality of any particular approach will depend a lot on individual situations, so I want to provide options. Each of you will need to discover which options seem the best fit for your individual situation.

GRADING:
Total 100%
- 70%   Lab Assignments – 14% each
- 10 % Participation
- 20%   Lab Quizzes – 10% each

While the course structure remains the same for both undergraduate and graduate students, graduate students lab assignments include delivering a technical memorandum that discusses each assignment's methodology and summarizes analytical findings, in addition to maps produced.

Late Assignment Penalties:
We remain in a somewhat challenging learning environment. I plan to be flexible when it comes to assignment due dates. I will accept assignments and labs up to ten days after they are formally introduced, with the exception of Lab 5, which is due no later than July 18th, at 11:59 pm.

Documented Disabilities
Students who have a documented disability and anticipate needing accommodations in this course should make arrangements to coordinate with, me as soon as possible. They should also request that the Counselor for Students with Disabilities send a letter verifying the disability.

<u>Course Schedule</u>

PPPM 4/534: Urban GIS, Summer 2021
Overview of Class Schedule and Readings:

Days 1 & 2 (6/21, 6/22): Introduction and Overview of GIS
Introductions
Course overview, Overview and history of GIS
Program Demonstration
ArcGIS, ArcGIS Online Terms

Assignment: Map Design Critique

Readings:
o   E-GIS, Chapter 1.
o   E-GIS, Chapters 2 and 9.

Days 3 & 4 (6/23, 6/24): Making maps using ArcGIS, ArcGIS Online
Data characteristics, classification & visualization

Assignment: Lab 1 -- Mapping population densities in Oregon Counties

Reading:
o   E-GIS, Chapter 6 (6.1, 6.3)

Days 5 & 6 (6/28, 6/29): Data Models, Geodatabase, and Geo-Referencing System
Vector data, Raster Data, Geodatabase and Projection

Assignment: Lab 2 --Mapping public schools in Lane County

Readings:
o   E-GIS, pp26-30, Chapter 4
o   Campbell, J. Map use & analysis, Chapter 4 (pp. 53-63)

Days 7 & 8 (6/30, 7/1): Geospatial Data and Attribute Data Management
Data joining and database manipulation

Assignment: Lab 3 --Mapping accessibility for the elderly population in Eugene.

Readings:
o   E-GIS, Chapters 3,5,6
o   Quiz 2 Prep (pre-recorded for review)

Day 9 (7/6): Lab Quiz 1 (ArcGIS basics, making maps)

Day 10 & 11 (7/7, 7/8): Relationships, Spatial transformation, Geoprocessing

Assignment: Lab 4 -- Geoprocessing Exercise

Readings:
o   E-GIS, Chapter 7
o   Self-taught: GTKArcGIS Chapters 18,19

Day 12 & 13 (7/12, 7/13): Geospatial Analysis (Part 2)
Spatial Joining, Merging

Assignment: Lab 5 -- Geoprocessing Exercise

Readings:
o   E-GIS, Chapter 8.
o   Drummond, William J. (1995) Address Matching: GIS Technology for Mapping Human Activity Patterns, Journal of the American Planning Association, Vol. 61, pp.240-251

Quiz 2 Prep (pre-recorded review)

Day 14 (7/14): Final Quiz

Lab Quiz 2 (ArcGIS basics, making maps, geoprocessing)