GISC4317/EPPS4317 Course Syllabus

Course Information

Course Number/Section	GISC4317/EPPS4317
Course Title	Introductory Programming for Social and Geospatial Science
Term	Fall 2024

Professor Contact Information

Professor	Dr. Bryan Chastain
Office Phone	972-883-2517
Email Address	chastain@utdallas.edu
Office Location	GR 3.412
Office Hours	Tuesdays 6:00 – 7:00 PM or by appointment
Other Information	We will use eLearning for this class. Please contact me through eLearning for all class related issues.
Teaching Assistant	Haitao Lyu, Haitao.Lyu@utdallas.edu Office Hours: Tuesdays 10:00 AM – noon or by appointment

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Either GISC2305 – Introduction to Spatial Thinking or GEOG3304 – Principles of Geographic Information Systems is recommended but not required.

Course Description

This course provides general introduction to GIS automation, including GIS object-based model design and computer programming languages, such as Python, and their application in GIS related project development. Topics covered include fundamental data structures and algorithms, user-interface design, component object model, and database management. Emphasis is on rapid application development with hands-on experiences.

Student Learning Objectives/Outcomes

At the end of this course, students will be able to:

- Understand fundamental programming concepts and basic programming skills
- Conduct application customization and build batch mode application models in a geoprocessing framework.
- Use various methods to access and process GIS data at the individual object level.

Suggested Course Materials

- Gawron, J. M. 2016. Python for Social Science. Available online at: https://gawron.sdsu.edu/python_for_ss/course_core/book_draft
- Pilgrim, M. 2011. Dive into Python 3. Available online at: http://www.diveintopython3.net/

Textbooks and some other bookstore materials can be ordered online or purchased at the UT Dallas Bookstore.

Technical Requirements
In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation
This course can be accessed using your UT Dallas NetID account on the eLearning website.

Please see the course access and navigation section of the Getting Started with eLearning webpage for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication
This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools.

Student emails and discussion board messages will be answered within 3 working days under normal circumstances.

Distance Learning Student Resources
Online students have access to resources including the McDermott Library, Academic Advising, the AccessAbility Resource Center, and many others. Please see the eLearning Current Students webpage for more information.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.

Academic Calendar

WEEK/ DATES	TOPIC/LECTURE	ASSESSMENT / ACTIVITY	DUE DATE
8/20	Introduction to the course	Lab 0	
8/27	Interactive Notebooks & Introduction to Python	Lab 1: employing Python to automate simple tasks	
9/3	Python Language Fundamentals	Lab 2: applying fundamental Python to report retirement financial goals	
9/10	Python Language Fundamentals (continued)	Lab 3: utilizing Python to arrange and describe lists of student information	
9/17	Working with functions, modules and packages	Lab 4: using Python functions to reduce code redundancy	
9/24	Scientific & tabular data	Lab 5: examining tabular data using numpy & pandas	
10/1	Data visualization	Lab 6: data vizualization using matplotlib & altair	
10/8	*Midterm Project - No Lecture!*	Conducting analyses with Python	

WEEK/ DATES	TOPIC/LECTURE	ASSESSMENT / ACTIVITY	DUE DATE
10/15	Graphical User Interface Design	Lab 12: fundamental GUI design using pyqt	
10/22	Working with spatial data	Lab 7: preparing web maps using ArcGIS API for Python	
10/29	Working with spatial data (continued)	Lab 8: generating geospatial data with Python	
11/5	Pulling data from the Web: APIs & webscraping	Lab 9: gathering data from the Web using requests and BeautifulSoup	
11/12	Introduction to the GeoProcessing Framework & Model Builder	Lab 10: using Model Builder to identify crime patterns	
11/19	Version Control	Lab 11: managing changes in source code via Git	
11/26	*No Class – Fall Break*		
12/3	**Final Presentations Due**		
12/10	**Final Project Due**		

Grading Policy

- 35% Laboratory Exercises
- 30% Midterm Project
- 35% Final Group Project

93-100 points = A; 90-92 points = A-
87-89 points = B+; 83-86 points = B; 80-82 points = B-
77-79 points = C+; 73-76 points = C; 70-72 points = C-
67-69 points = D+; 63-66 points = D; 60-62 points = D-
59 and below = F

Course Policies

Make-up exams

No Make-up project will be given without a legitimate excuse accompanied by proper formal documentation (e.g., a doctor's excuse).

Extra Credit

TBD

Late Work

Late submission for labs will be penalized 10% per day late

Special Assignments

TBD

Class Attendance

The University's attendance policy requirement is that individual faculty set their course attendance requirements. Regular and punctual class attendance is expected. Students who fail to attend class regularly are inviting scholastic difficulty. In some courses, instructors may have special attendance requirements; these should be made known to students during the first week of classes.

Class Participation

Regular class participation is expected regardless of course modality. Students who fail to participate in class regularly are inviting scholastic difficulty. A portion of the grade for this course is directly tied to your participation in this class. It also includes engaging in group or other activities during class that solicit your feedback on homework assignments, readings, or materials covered in the lectures (and/or labs). Class participation is documented by faculty. Successful participation is defined as consistently adhering to University requirements, as presented in this syllabus. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

Texas Senate Bill 17, the recent law that prohibits diversity, equity, and inclusion programs and activities at public universities in Texas, does not in any way apply to academic course instruction. Students should not feel the need to self-censor or limit their participation in academic courses pertaining to topics of race and racism, structural inequality, LGBTQ+ issues, or diversity, equity, and inclusion, and related topics.

Class Recordings
Students are expected to follow appropriate University policies and maintain the security of passwords used to access recorded lectures. Unless the AccessAbility Resource Center has approved the student to record the instruction, students are expressly prohibited from recording any part of this course. Recordings may not be published, reproduced, or shared with those not in the class or uploaded to other online environments except to implement an approved AccessAbility Resource Center accommodation. Failure to comply with these University requirements is a violation of the Student Code of Conduct.

The instructor may record meetings of this course. These recordings will be made available to all students registered for this class if the intent is to supplement the classroom experience. If the instructor or a UTD school/department/office plans any other uses for the recordings, consent of the students identifiable in the recordings is required prior to such use unless an exception is allowed by law.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

Accommodations for Students with Disabilities

Please review the section within the UT Dallas Syllabus Policies and Procedures webpage.

Academic Support Resources

Please visit the Academic Support Resources page to view the University's academic support resources for all students.

UT Dallas Syllabus Policies and Procedures

Please visit the Syllabus Policies page to view the University's policies and procedures segment of the course syllabus.

Please review the catalog sections regarding the credit/no credit or pass/fail grading option and withdrawal from class.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.