HOUSTON COMMUNITY COLLEGE

Division of Geographic Information Science
Computer Programming Department
https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/geographic-information-science

---

GISC 2250: Scripting For GIS | Lecture | #19367
Fall 2019 | Second 8 Weeks (10.21.2019-12.15.2019)
Hybrid | Alief-Hayes B142 | TU 5:30 P.m.-8:20 p.m.
2 Credit Hours | 48 hours per semester

Instructor Contact Information

Instructor:	Andrew Kudowor, Ph.D.	Office Phone:	713-718-0000
Office:	Alief-Hayes, Room B142	Office Hours:	M-R 9:30-10:45 a.m.
HCC Email:	andrew.kudowor@hccs.edu	Office Location:	Alief-Hayes Faculty Area

Please feel free to contact me concerning any problems that you are experiencing in this course. Your performance in my class is very important to me. I am available to hear the concerns and just to discuss course topics.

Instructor's Preferred Method of Contact

You may reach me via my email (andrew.kudowor@hccs.edu). I will respond to emails within 24 hours Monday through Friday; I will reply to weekend messages on Monday mornings.

What's Exciting About This Course

The course is going to enhance the way you handle and manage geographic data and provide you with the skills needed to cut hours spent on geographic data analyses to minutes, by way of process automation. You will be using python scripting in an ArcGIS software environment, the most widely used software in the industry,

My Personal Welcome

I am excited to welcome you to the Scripting for GIS program. My name is Dr. Andrew Kudowor, professor of GIS at HCC. Choosing this course is one of the best decision you will be making towards your working life.

The course will commence with the conventional way of solving geographic data analysis and management problems, and introduce you to python scripting language and model building techniques, and progress into using the python scripting language in developing scripts to automate the geographic data management processes, with hands-on problem solving projects. The course will in addition provide you the skills in converting python scripts into ArcGIS tools that can be stored in ArcGIS's toolbox.

Please make sure to read the **rest of this syllabus** for more important information about the program including, course description, pre-requisites, students learning outcomes, required textbook and instructional material, course assignments/assessments, as well as other course policies.

As the course progresses, you may encounter challenges and difficulties in completing your coursework. I am available to support you. The fastest way to reach me is through my HCC e-mail (andrew.kudowor@hccs.edu). The best way to really discuss issues is in person and we can always arrange a convenient time for a face-to-face meeting to tackle your challenges. My goal is for you to walk out of the course with a solid understanding of scripting for GIS and its benefits to Geographic data handling. So please visit me or contact me via my email whenever you have a question.

Prerequisites and/or Co-Requisites

The course materials are crucial for anyone who works with geographic information systems and wants to automate geoprocessing workflow in ArcGIS. Students taking this course are expected to have basic understandings and skills in GIS. The prerequisites for this course includes GISC 14111 and GISC 1401 or equivalents. Programming experience is not required, but it is definitely a plus. Having satisfied these prerequisites, gives you a higher chance of success in this course than students who have not done so. Please carefully read and consider the repeater policy in the HCCS Student Handbook.

Canvas Learning Management System

This section of GISC 2250 will use Canvas (https://eagleonline.hccs.edu) to supplement in-class assignments, exams, and activities. During our meetings, we will discuss in details when to supplement canvas for our engagements as the class progresses.
HCCS Open Lab locations may be used to access the Internet and Canvas. **USE FIREFOX OR CHROME AS THE INTERNET BROWSER**.

HCC Online Information and Policies

Here is the link to information about HCC Online classes including the required Online Orientation for all fully online classes: http://www.hccs.edu/online/

Scoring Rubrics, Sample Assignments, etc.

Look in Canvas for the scoring rubrics for assignments, samples of class assignments, and other information to assist you in the course. https://eagleonline.hccs.edu/login/ldap

Instructional Materials

Textbook Information

The textbook listed below is an excellent reference for this course and you may order the book from HCC Bookstore. You can either use a hard or electronic copy of the book.

Title: Python Scripting for ArcGIS
Author: Paul Zandbergen
ISBN: 9781589482821

Online references include:

- ArcGIS 10 Desktop Help: Geoprocessing with Python: http://help.arcgis.com/en/arcgisdesktop/10.0/help/index.html#/What_is_Python/002z00000001000000/
- Python Tutorial: http://docs.python.org/tutorial/
- Python Homepage: http://www.python.org

Tutoring

HCC provides free, confidential, and convenient academic support, including writing critiques, to HCC students in an online environment and on campus. Tutoring is provided by HCC personnel in order to ensure that it is contextual and appropriate. Visit the HCC Tutoring Services website for services provided.

Libraries

The HCC Library System consists of 9 libraries and 6 Electronic Resource Centers (ERCs) that are inviting places to study and collaborate on projects. Librarians are available both at the libraries and online to show you how to locate and use the resources you need. The libraries maintain a large selection of electronic resources as well as collections of books, magazines, newspapers, and audiovisual materials. The portal to all libraries' resources and services is the HCCS library web page at http://library.hccs.edu.

Supplementary Instruction

Supplemental Instruction is an academic enrichment and support program that uses peer-assisted study sessions to improve student retention and success in historically difficult courses. Peer Support is provided by students who have already succeeded in completion of the specified course, and who earned a grade of A or B. Find details at http://www.hccs.edu/resources-for/current-students/supplemental-instruction/.

Course Overview

GISC 2250 Introduces the Geoprocessing framework, including the theory, concept, and practice of scripting for ArcGIS users. The basic concepts of python scripting will be introduced. The course is design to teach students how to design and write well-structured scripts and models to automate and customize ArcGIS interface for Geographic data handling. The concept of geoprocessing and the use of model builder to automate ArcGIS procedures will be practiced. It will also introduce students to ArcPy module that provide access to all ArcGIS geoprocessing tools within ArcPy. The course assumes familiarity with the internet.

Program Student Learning Outcomes (PSLOs)

Can be found at:
https://www.hccs.edu/programs/areas-of-study/science-technology-engineering--math/geographic-information-science/

Course Student Learning Outcomes (CSLOs)

Upon completion of GISC 2250, the student will be able to:

- Understand the concepts of basic ArcGIS customization and python scripting
- Be able to write python scripts for automating GIS processing procedures in ArcGIS.
- Understand and execute ArcPy modules in ArcGIS.
- Be able to convert python scripts into geoprocessing tools in ArcGIS.
- Demonstrate a fundamental understanding of model builder and python scripting environments in ArcGIS.

Student Success

Expect to spend at least twice as many hours per week outside of class as you do in class studying the course content. Additional time will be required for hands-on project assignments. The assignments provided will help you practice the concepts discussed in class lectures and hone your hand-on python scripting skills. Successful completion of this course requires a combination of the following:

- Reading the textbook
- Attending class in person and/or online
- Completing assignments
- Participating in class activities

There is no short cut for success in this course; it requires reading and studying the material and more importantly completing the assignments.

Instructor and Student Responsibilities

As your Instructor, it is my responsibility to**:**

- Provide the grading scale and detailed grading formula explaining how student grades are to be derived
- Facilitate an effective learning environment through learner-centered instructional techniques
- Provide a description of assignments
- Inform students of policies such as attendance, withdrawal, tardiness, and making up assignments
- Provide the course outline and class calendar
- Arrange to meet with individual students ss as needed

As a student, it is your responsibility to**:**

- Attend class in person and/or online
- Participate actively by reviewing course material, interacting with classmates, and responding promptly in your communication with me
- Read and comprehend the textbook
- Complete the required assignments and exams
- Ask for help when there is a question or problem
- Keep copies of all paperwork, including this syllabus, handouts, and all assignments
- Be aware of and comply with academic honesty policies in the HCCS Student Handbook

Assignments, Exams, and Activities

Assignments

There will be one assignment per each lecture to enforce what has been discussed during the lecture. Each assignment will be a project, involving the implementation of all the tools learnt during the lecture. For most assignments, the format of your solution will be in the form of an ArcGIS map package. Submission of solutions will be discussed for each project based on the type of format required. All project and scripting assignments are to be completed individually. See Grading Formula below for assignments weight toward your course grade.

Quizzes

Quizzes are short assessments administered online (on Canvas) each consisting of a set of multiple-choice question covering material in one module. The purpose of quizzes is to help you assess your knowledge of the material covered in a module and prepare for the major exams. Quizzes are to be completed individually and may not be made up for any reason. There will be one quiz in each module.

Exams

There will be two tests a mid-term and a final exam**.** All exams will be closed-book, closed-notes, proctored exams to be taken in-person. Please see Grading formula for the weight of each exam toward your course grade and see the Course Calendar below for scheduled exam dates and the time limit for each.

Make-up exams will be given *only* in cases of extenuating circumstances. Extenuating circumstances are **unexpected and unavoidable** situations such as hospitalization or auto accident. They don't include forgetting about the date of the exam, busy work schedule, etc. You would need to provide documentation to your instructor as soon as possible after the missed assignment/assessment for consideration. Extenuating circumstances will be evaluated by your instructor on a case by case basis. It is your responsibility to contact your instructor with documentation of your situation as soon as possible, schedule a makeup exam, and submit the proper documentation to the department**.** All missed grades will be recorded as zeros

Final Exam

The final exam will be administered on campus (i.e. must be taken in person). It will be closed book, closed notes and comprehensive.

Students who are absent from the final exam without discussing their absence with the instructor in advance or within 24 hours afterward will receive a course grade of Incomplete. Any student who does not take a makeup exam by the end of the following long semester will receive a final exam grade of zero and a course grade of F.

Grading Formula

Lab Exercises and Projects	50%
Class Test and Quizzes	20%s
Mid Term Exams	10%
Final Exam	20%

Grade	Total %
A	90-100%
B	80-89%
C	70-79%
D	60-69%
F	< 60%

Incomplete Policy:
In order to receive a grade of Incomplete ("I"), a student must have completed at least 80% of the work in the course. In all cases, the instructor reserves the right to decline a student's request to receive a grade of Incomplete.

HCC Grading Scale can be found on this site under Academic Information:
http://www.hccs.edu/resources-for/current-students/student-handbook/

Course Calendar

Week	Dates	Topic / Assignments Due
1		N/A
2		N/A
3		N/A
4		N/A
5		N/A
6		N/A
7		N/A
8		N/A
9	10/21/2019	Course Orientation, Basic ArcGIS customization/ Project1 submission
10	10/29/2019	Geoprocessing in ArcGIS/Project2
11	11/05/2019	Architecture of the model builder in ArcGIS I/Project3/Class Test
12	11/12/2019	Model Builder in ArcGIS II/Project4
13	11/19/2019	Basics principles of python programming/Mid Term Exam
14	11/26/2019	Scripting in ArcGIS/Project5/Class Test
15	12/03/2019	Scripting in ArcGIS II/Project6
16	12/10/2019	Final Students Project/Final Exam (1.5 hours)

Syllabus Modifications

The instructor reserves the right to modify the syllabus at any time during the semester and will promptly notify students in writing, typically by e-mail, of any such changes.

Instructor's Practices and Procedures

Missed Assignments

Unless accepted as a valid excuse or emergency, assignments or exams are expected to be completed by the due date. Assignments submitted after the due date will not be accepted and will be recorded as zero. However, if your excuse is accepted as valid or emergency, you will be required to submit a supporting documentation before you will be allowed to submit a late assignment or take a makeup exam. **Note that a make-up exam is not a retake**. That is, make-up exams are allowed only for missed exams.

Academic Integrity

Students are expected to complete all materials (exams & exercises) on their own. This does not prevent the student from seeking assistance from the instructor or other students. Copying/Modifying of assignments or cheating on exams will result in dismissal from this course and the student may be expelled from HCCS. Please refer to the current HCCS Student Handbook, Scholastic Dishonesty and Violations for further information..

Here's the link to the HCC information about academic integrity (Scholastic Dishonesty and Violation of Academic Scholastic Dishonesty and Grievance):
http://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-procedures/

Attendance Procedures

Students are expected to attend all class sessions and laboratory periods for which they are enrolled. The instructor will define circumstances under which an absence may be excused. The instructor is responsible for the maintenance of standards and quality of student work in his or her classes and absences are generally an individual matter between the student and instructor.

Student Conduct

The classroom is a learning-centered environment in which faculty and students are unhindered by disruptive behavior. You are expected to act in a mature manner and to be respectful of the learning process, your instructor and your fellow students. In other to ensure an environment conducive to learning and for successful completion of the program, students must get to class on time, turn off mobile phones, attend every class, turn-in assignments on time, extend respect and support to classmates, come to class prepared, and take responsibility of their education.

Electronic Devices

Student may not use an electronic device during class time without my express permission. Use of cell/smartphones during class time is always prohibited, as is leaving the room to answer or make a call. A student with a diagnosed disability must present to me the appropriate paperwork from the Office of Disability Services in order to work out an accommodation for the use of otherwise prohibited electronic devices.
A student violating an instructor's classroom policy or individual instructions on the use of electronic devices in the classroom shall be subject to any or all of the following actions: Dismissal from the class for the day on which the offense occurs or referral of the student to the appropriate authorities for disciplinary action under the Code Student Conduct.

HCC Policies

Here's the link to the HCC Student Handbook http://www.hccs.edu/resources-for/current-students/student-handbook/ In it you will find information about the following:

- Academic Information
- Academic Support
- Attendance, Repeating Courses, and Withdrawal
- Career Planning and Job Search
- Childcare
- disAbility Support Services
- Electronic Devices
- Equal Educational Opportunity
- Financial Aid TV (FATV)
- General Student Complaints
- Grade of FX
- Incomplete Grades
- International Student Services
- Health Awareness
- Libraries/Bookstore
- Police Services & Campus Safety
- Student Life at HCC
- Student Rights and Responsibilities
- Student Services
- Testing
- Transfer Planning
- Veteran Services

EGLS^3

The EGLS^3 (Evaluation for Greater Learning Student Survey System) will be available for most courses near the end of the term until finals start. This brief survey will give invaluable information to your faculty about their teaching. Results are anonymous and will be available to faculty and division chairs after the end of the term. EGLS^3 surveys are only available for the Fall and Spring semesters. EGLS3 surveys are not offered during the Summer semester due to logistical constraints.
http://www.hccs.edu/resources-for/current-students/egls3-evaluate-your-professors/

Campus Carry Link

Here's the link to the HCC information about Campus Carry:
http://www.hccs.edu/departments/police/campus-carry/

HCC Email Policy

When communicating via email, HCC requires students to communicate only through the HCC email system to protect your privacy. If you have not activated your HCC student email account, you can go to HCC Eagle ID and activate it now. You may also use Canvas Inbox to communicate.

Housing and Food Assistance for Students

Any student who faces challenges securing their foods or housing and believes this may affect their performance in the course is urged to contact the Dean of Students at their college for support. Furthermore, please notify the professor if you are comfortable in doing so.

This will enable HCC to provide any resources that HCC may possess.

Office of Institutional Equity

Use the link below to access the HCC Office of Institutional Equity, Inclusion, and Engagement (http://www.hccs.edu/departments/institutional-equity/)

Disability Services

HCC strives to make all learning experiences as accessible as possible. If you anticipate or experience academic barriers based on your disability (including long and short term conditions, mental health, chronic or temporary medical conditions), please meet with a campus Abilities Counselor as soon as possible in order to establish reasonable accommodations. Reasonable accommodations are established through an interactive process between you, your instructor(s) and Ability Services. It is the policy and practice of HCC to create inclusive and accessible learning environments consistent with federal and state law. For more information, please go to http://www.hccs.edu/support-services/disability-services/

Title IX

Houston Community College is committed to cultivating an environment free from inappropriate conduct of a sexual or gender-based nature including sex discrimination, sexual assault, sexual harassment, and sexual violence. Sex discrimination includes all forms of sexual and gender-based misconduct and violates an individual's fundamental rights and personal dignity. Title IX prohibits discrimination on the basis of sex-including pregnancy and parental status in educational programs and activities. If you require an accommodation due to pregnancy please contact an Abilities Services Counselor. The Director of EEO/Compliance is designated as the Title IX Coordinator and Section 504 Coordinator. All inquiries concerning HCC policies, compliance with applicable laws, statutes, and regulations (such as Title VI, Title IX, and Section 504), and complaints may be directed to:

David Cross
Director EEO/Compliance
Office of Institutional Equity & Diversity
3100 Main
(713) 718-8271
Houston, TX 77266-7517 or Institutional.Equity@hccs.edu
http://www.hccs.edu/departments/institutional-equity/title-ix-know-your-rights/

Office of the Dean of Students

Contact the office of the Dean of Students to seek assistance in determining the correct complaint procedure to follow or to identify the appropriate academic dean or supervisor for informal resolution of complaints.

https://www.hccs.edu/about-hcc/procedures/student-rights-policies--procedures/student-complaints/speak-with-the-dean-of-students/

Department Chair Contact Information

Reni Abraham reni.abraham@hccs.edu 713)718-2067