GSEN 5355.001/W01: Design and Analysis of GIS Applications  
Geospatial Surveying Engineering Program  
Fall 2015

A. COURSE INFORMATION

Course number/section: GSEN 5355.001/W01  
Class meeting time: Lecture: MW 2:00-3:15  
Class location: Lecture: CBI 104 and online  
Course Website: http://bb9.tamucc.edu

B. INSTRUCTOR INFORMATION

Instructor: Richard Smith, Ph.D.  
Office location: CBI 106  
Office hours: TW 9:00AM-11:30AM  
Telephone: 361-825-2750  
e-mail: Richard.Smith@tamucc.edu  
Appointments: Email or call to make an appointment.

C. COURSE DESCRIPTION

Catalog Course Description
Programming course focusing on the design and implementation of GIS scripts. Topics covered include GIS scripts, GIS tool creation, and user interface design and implementation.

D. PREREQUISITES AND COREQUISITES

Prerequisites
None

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES

Required Textbook(s)
ISBN-10: 1590282418

Supplies
- Windows Operating System (XP/Vista/7/8).
- ArcGIS 10.4 or higher with 3D Analyst and Spatial Analyst. This is provided in lab on campus. If attending online, software will be provided as a download.
- PyScripter - http://code.google.com/p/pyscripter/
- Adobe PDF viewer. (e.g. Adobe Acrobat Reader).
- Web browser with Java Virtual Machine installed.
- Video player able to play MPEG-4 video (VLC, Windows Media Player).
- Speakers/headphones.
Online students: Microphone and webcam.
Online students: Consistent, weekly access to high-speed internet.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:
1. Apply object oriented programming concepts.
2. Develop Python programs to script cartographic models.
3. Utilize APIs, modules, and libraries to develop new GIS applications and extend existing applications.

G. INSTRUCTIONAL METHODS AND ACTIVITIES
All lectures will be presented live in the classroom and recorded for posting online. In-person students will attend live lectures and labs while online students will watch lecture recordings and complete labs on their own time.

H. MAJOR COURSE REQUIREMENTS AND GRADING
Student learning outcomes will be assessed through one examination and a number of lab assignments. Labs will be graded based on: completeness, correctness, and documentation.

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>% of FINAL GRADE</th>
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<tbody>
<tr>
<td>Exams</td>
<td>15</td>
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<tr>
<td>Lab Assignments</td>
<td>85</td>
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I. COURSE CONTENT/SCHEDULE

<table>
<thead>
<tr>
<th>Week</th>
<th>Topic</th>
<th>Reading</th>
<th>Laboratory</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction to Python</td>
<td>As assigned</td>
<td>Assignment 1</td>
</tr>
<tr>
<td>2</td>
<td>Introduction to Python</td>
<td>As assigned</td>
<td>Assignment 2</td>
</tr>
<tr>
<td>3</td>
<td>Python scripting for geoprocessing</td>
<td>As assigned</td>
<td>Assignment 3</td>
</tr>
<tr>
<td>Assignment</td>
<td>Task Description</td>
<td>Due Date</td>
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<tr>
<td>4</td>
<td>Python scripting for geoprocessing</td>
<td>As assigned Assignment 4</td>
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<tr>
<td>5</td>
<td>Python scripting for geoprocessing</td>
<td>As assigned Assignment 5</td>
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<tr>
<td>6</td>
<td>Python scripting for map automation</td>
<td>As assigned Assignment 6</td>
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<tr>
<td>7</td>
<td>Python scripting for map automation</td>
<td>As assigned Assignment 7</td>
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<tr>
<td>8</td>
<td>Python scripting for Add-ins</td>
<td>As assigned Assignment 8</td>
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<tr>
<td>9</td>
<td>Python scripting for Add-ins</td>
<td>As assigned Assignment 9</td>
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<tr>
<td>10</td>
<td>Python scripting for Add-ins</td>
<td>As assigned Assignment 10</td>
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<tr>
<td>11-14</td>
<td>Solving Problems with Python</td>
<td>Challenge-Based Instruction</td>
<td></td>
</tr>
<tr>
<td>Finals</td>
<td>Final Examination</td>
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Note: Changes in this course schedule may be necessary and will be announced to the class by the Instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness
Students are expected to attend regular class and lab meetings. Online students are expected to regularly log in to the course website, watch lectures, and submit assignments.

Late Work and Make-up Exams
All assignments must be completed on time. Submission of an assignment after the due date is accepted, but with a penalty of 30% of the grade for the first 24 hours late, and 10% each additional 24 hours. Make-up exams and assignments are not permitted except for documented, exceptional reasons.

Extra Credit
No extra credit options are available for this course. No exceptions.

Food in Class
Do not eat food during class or lab. Food is forbidden in computer labs.

Email
Consider email as official correspondence warranting professional language. Professional emails include elements such as a short descriptive subject line, salutation, complete inquiry in the body of the message, your full name, and course and section number. Unprofessional emails will result in a non-response and request for proper correspondence.
Prior Learning and Lecture Slides
The professor will assume that prior to class you have made an earnest effort to understand the material. This will allow you to be prepared to engage the material in more detail or address misunderstandings in class. The slides in class are primarily for visual learners who need to both hear words and see text as they are learning. They are not meant for students to copy as a substitute for prior studying and learning. As such, students should not frantically try to write down everything from the lecture slides. Lecture is simply another time and place to encounter the material again since repeat exposure helps with memory and understanding. As such, your in-class lecture notes do not need to be extremely lengthy. Additionally, please pay attention to what is not on the slides, that is, the extra examples and vocabulary the professor mentions that are related to the slides.

Technological Excuses
Hard drive crashes and other computer woes will not be accepted as excuses for late submission. Students should, given the complexity of the tasks they will pursue, be sure that they maintain adequate backup copies of all aspects of their work. Additionally, plan ahead so that you will have time to use the on-campus computers and printers if necessary. You may NOT submit papers/assignments by e-mail. If for some reason you feel you have to do this, you must ask for, and receive, permission ahead of time; furthermore, you may not consider an e-mailed paper/assignment to be submitted until you have received a reply confirming that I have received the paper/assignment.

Communication about Life Events
It is the your (student’s) responsibility to keep up with the course instruction, assignments, and examinations. Should a life event interrupt your ability to meet these responsibilities, you must inform the instructor about this as soon as possible and within a reasonable amount of time so that a course of action can be determined. Communicating with the instructor about these life events in an unreasonable time frame is not acceptable and will not change the outcome of missed work nor will it be a valid reason to receive an ‘Incomplete’ designation for the course.

Originality of Work
Every exam and lab assignment for this class must be your own work. You may ask for clarification and assistance for figuring out an algorithm, but you may not copy or use anyone else’s code for any reason in this course, unless explicitly stated in a lab assignment or exam.

Digital Assignment Submission Instructions
Assignments submitted through the course website must follow the “Assignment Submission Instructions” document posted on the course website. Failure to follow the steps outlined in this document may result in deducted points for the assignment. Assignments submitted through the course website will be returned through the course website.

Note to Online Students
Lecture recordings will be made available online immediately after the in-class meeting. It is
your responsibility to watch the recordings in every week so you stay up with the course. Laboratory assignments will be completed on your home computer and must be submitted digitally to the Island Online on a weekly basis. You are responsible for installing and testing the GIS software during the first week of class and keeping your home computer in good working order.

K. COLLEGE AND UNIVERSITY POLICIES

- Academic Integrity (University)
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- Classroom/Professional Behavior
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- Statement of Civility
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- Deadline for Dropping a Course with a Grade of W (University)
  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must be submitted. No student is eligible to receive a W without completing the official
drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

- **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

- **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

  If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.  
  
  http://disabilityservices.tamucc.edu/

- **Statement of Academic Continuity**
  - In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, websites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students need to make certain that the course instructor has a primary and a secondary means of contacting each student.
GENERAL DISCLAIMER
I reserve the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. I will announce such changes in a timely manner during regularly scheduled lecture periods.