FUNDAMENTALS OF GEOGRAPHIC INFORMATION SYSTEMS
SURV 2200

Class Hours: 2.0  Credit Hours: 3.0
Laboratory Hours: 2.0  Date Revised: Fall 2013

Catalog Course Description:

Designed for students who want to become generally familiar with GIS technology and those seeking basics needed for advanced GIS courses. An overview of the GIS profession and the opportunities available in the field, including introductory content on typical business and technical applications, data, software and techniques used to complete GIS projects are covered. Students receive hands-on experience with global positioning and GIS hardware and software. When possible, local GIS professionals present seminars on their work.

Entry Level Standards:

The student should be able to effectively communicate with instructor and peers, complete assignments according to instructor specifications, and read and write at the required level. Students must have knowledge and experience working in the Windows (7) environment including the use of Microsoft Office software components.

Prerequisites:

None

Corequisites:

None

Textbook(s) and Other Course Materials:

GIS Fundamentals, Paul Bolstad, Eider Press. Third Edition

I. Week/Unit/Topic Basis:

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<thead>
<tr>
<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction &amp; GIS Data</td>
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<tr>
<td>2</td>
<td>Data Models</td>
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<td>3</td>
<td>Mapping GIS Data</td>
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<td>4</td>
<td>Map Projections &amp; Coordinate Systems</td>
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<td>5</td>
<td>Exam 1</td>
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<td></td>
<td>Maps, Data Entry, Editing &amp; Output</td>
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II. Engineering Technology General Outcomes (Educational objectives)

I. Apply basic engineering theories and concepts creatively to analyze and solve technical problems

II. Utilize with a high degree of knowledge and skill equipment, instruments, software, and technical reference materials currently used in industry.

III. Communicate effectively using developed writing, speaking, and graphics skills.

IV. Assimilate and practice the concepts and principles of working in a team environment.

V. Obtain employment within the discipline or matriculate to a four year program in engineering or industrial technology

III. Engineering Technology Concentration Competencies*

Students will:

A. Apply the knowledge, techniques, skills, and modern tools for the concentration of study to specifically defined engineering technology activities

B. Demonstrate the knowledge of mathematics, science, engineering and technology to engineering technology problems using developed practical knowledge

C. Conduct and report the results of standard tests and measurements, and conduct, analyze and interpret experiment or project results

D. Function effectively as a member of a technical team

E. Identify, analyze and solve specifically defined engineering technology-based problems

F. Employ Written, oral and visual communication in a technical environment
At the program level all 6 competencies apply to roman numerals I – V of the Engineering Technology General Outcomes (Educational objectives) listed above.

IV. Course Goals*:

The course will

1. Build the skills to access spatial data sources, i.e., maps, land records, etc. (A, B, E)

2. Foster the ability to create digital spatial data, i.e., digitizing maps, georeferencing raster data, GNSS data collection. (A, B, C, E)

3. Build the skills to manage data by editing & validating digital databases/files. (A, B, C, F)

4. Introduce the skills to analyze data, i.e. querying/joining data, using address matching to convert postal addresses and/or zip codes to geographic coordinates, thus creating new data. (A, B, C, E)

5. Build the skills to display analysis results in the form of maps, tables, & graphs. (A, B, C, F)

*Capital letters after course goals reference the competencies of the Engineering Technology concentrations listed above.

V. Expected Student Learning Outcomes*:

Students will: be able to:

a. Locate data for use in a GIS. 1

b. Plan GPS data collection for GIS applications. 2

c. Make wise choices between data collection and GIS analysis methods. 1, 2, 4

d. Use on-screen digitizing with images scanned from maps, photographs, or satellite data if suitable. 2

e. Determine whether raster or vector data will be used. 1, 2, 4

f. Utilize database for editing entity and attribute errors. 3

g. Perform table and spatial queries. 4

h. Use spatial analysis tools with vector and raster data. 4

i. Apply the ideas of the mean, median, mode, variance and standard deviation to data. 4

j. Evaluate the accuracy of both base files and address files and standardize address files. 4

k. Evaluate non-matches and understand the rematch process. 4

l. Use knowledge of map elements, map types, and proper cartographic conventions to guide map design decision-making. 5

m. Operate plotter/printers to produce high quality maps. 5

* Numbers after Expected Student Learning Outcomes reference the course goals listed above.
VI. Evaluation:

A. Testing Procedures: 45-50 % of grade

Exams:
Three exams will be given. Exams are true-false, multiple choice, matching, short answer/essay.
When a student misses an exam due to illness or any other unforeseen circumstance, he must contact the instructor immediately upon return and make-up the exam within one week.
For scheduled absences (appointments, military duty etc.), arrangements must be made with the instructor before the absence.

B. Laboratory Expectations: 35 % of grade

Each student is expected to complete all laboratory and online course assignments.
GPS/GIS Skills: There will be individual exam(s) to demonstrate competence in using GPS/GIS software and associated laboratory equipment.

C. Field Work: 0 % of grade

Students will be required to collect GPS data in the field to be processed in the laboratory.
This is part of the laboratory expectations.

D. Other Evaluation Methods: 15 - 20 % of grade

Individual or small team project, presentation and report. 10 - 15%
Class Participation 5%

E. Grading Scale:

Grades are based on the following:
90 - 100 A
85 - 89 B+
80 - 84 B
75 - 79 C+
70 - 74 C
60 - 69 D
Below 60 F

VII. Policies:

Policies (e.g., attendance, academic and classroom misconduct) should be consistent with policies stated in the current College catalog.

A. Attendance Policy:

Pellissippi State expects students to attend all scheduled instructional activities. As a minimum, students in all courses (excluding distance learning courses) must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic Affairs, may have requirements that are more stringent. In very specific circumstances, an appeal of the policy may be addressed to the head of the department in which the course was taken. If further action is warranted, the appeal may be addressed to the vice president of Academic Affairs.
B. Academic Dishonesty:

Academic misconduct committed either directly or indirectly by an individual or group is subject to disciplinary action. Prohibited activities include but are not limited to the following practices:

- Cheating, including but not limited to unauthorized assistance from material, people, or devices when taking a test, quiz, or examination; writing papers or reports; solving problems; or completing academic assignments.
- Plagiarism, including but not limited to paraphrasing, summarizing, or directly quoting published or unpublished work of another person, including online or computerized services, without proper documentation of the original source.
- Purchasing or otherwise obtaining prewritten essays, research papers, or materials prepared by another person or agency that sells term papers or other academic materials to be presented as one’s own work.
- Taking an exam for another student.
- Providing others with information and/or answers regarding exams, quizzes, homework or other classroom assignments unless explicitly authorized by the instructor.
- Any of the above occurring within the Web or distance learning environment.

Please see the Pellissippi State Policies and Procedures Manual, Policy 04:02:00 Academic/Classroom Conduct and Disciplinary Sanctions for the complete policy.

C. Accommodations for disabilities:

Students that need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by sending email to disabilityservices@pstcc.edu, or visiting Goins 127, 132, 134, 135, 131. More information is available at http://www.pstcc.edu/sswd/.

D. Other Policies:

Use of Equipment:
Any act of misuse, vandalism, malicious or unwarranted damage or destruction, defacing, disfiguring, or unauthorized use of property/equipment belonging to Pellissippi State is subject to disciplinary sanction.