Catalog Course Description:

This course covers the essentials in AutoCAD Civil 3D as it applies to land development design and applications. Students learn how to generate subdivision parcels, create roadway alignments and produce different profile views. In addition, students create a storm water piping system and profiles and a detention basin based on existing and finished ground elevations. This course also covers site grading in which students balance cut and fill calculations, create swales and berms, calculate corridor volumes and show design sections.

Entry Level Standards:

Must be able to read at the college level and have basic AutoCAD skills.

Prerequisites:

CET 1100

Textbook(s) and Other Course Materials:

Text:

Reference:
Surveying Fundamentals, Jack McCormac, Prentice-Hall Publishing Co
AutoCAD Civil 3D 2009, Essentials AOTC, Autodesk, Autodesk
AutoCAD Civil 3D 2009, residential Grading AOTC, Autodesk, Autodesk

I. Week/Unit/Topic Basis:

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<th>Week</th>
<th>Topic</th>
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| 1    | Lecture: Class overview, guidelines and AutoCAD Civil 3D Environment  
      | Lab: Working with Survey and Points |
| 2    | Lecture: Points  
      | Lab: Surfaces |
| 3    | Lecture: Site Design - Parcels  
      | Lab: Site Design - Parcels |
| 4    | Lecture: Site Design - Alignments  
      | Lab: Site Design – Profiles |
Lecture: Site Design – Assemblies and Corridors
Lab: Site Design – Grading and Quantities

Lecture: Site Design
Lab: Site Design - Pipes

Lecture: Examining Site Conditions
Lab: Creating Detention Basins

Lecture: Designing Roadway Grading
Lab: Designing Roadway Grading

Lecture: Working with Earthwork Volumes
Lab: Balancing Earthwork

Lecture: Refining Surface Grading
Lab: Creating and Grading Swales

Lecture: Grading Open Areas
Lab: Design Storm Collection and Utilities

Lecture: Completing Plans
Lab: Revising the Design

Lecture: Rendering the Design & Completing Plans
Lab: Transportation - Alignments

Lecture: Transportation – Assemblies and Corridors
Lab: Transportation – Section and Quantities

Final Exam

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. Lay out streets and lots for desired density and maximum safety. A
2. Design Storm Sewer and Detention Basin System for a subdivision. A, B
3. Create horizontal and vertical curves. A, B
4. Produce plan and profile views. A, B, C
5. Enhance team skills. D, E, F
6. Utilize effective verbal, written and graphic communication. D, E, F
7. Generate contour lines and earth volume estimates. A, B

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

V. Expected Student Learning Outcomes*:
The student will be able to:

1. Employ efficient methods for street and parcel layouts. 1, 3, 4
2. Employ good lot design. 1, 2
3. Create horizontal curves. 3
4. Create vertical curves. 3
5. Understand the function of each part of a storm water storage and control structures. 2
6. Understand the layout and design of an urban storm drainage system. 2, 4
7. Create a storm sewer piping system, both plan and profile. 2, 4
8. Create a detention basin. 2, 7
9. Create road profiles and cross sections. 4
10 Determine earth volumes. 4,7

11 Work effectively in a team environment. 5,6

12 Utilize effective oral, written and graphic communication skills. 5,6

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

VI. Evaluation:

A. Testing Procedures: 100% of grade

Evaluation in this course will be based on the quality of drawings produced, homework, and short quizzes given during the semester. Final grades will be calculated as follows:

- Assigned Drawings - 60% ---- 70%
- Projects - 20% ---- 30%
- Short quizzes - 10%

B. Laboratory Expectations:

This course is primarily a laboratory course. Lecture time will be spent explaining the various principles and standards in site planning. The student's laboratory time will be spent applying these principles to create specific assignments/drawings using the computer. It is not intended that the time required completing projects fit within the scheduled class or lab period.

C. Field Work:

N/A

D. Other Evaluation Methods:

N/A

E. Grading Scale:

Grades are based on the following:
- 90 - 100 A
- 86 - 89 B+
- 80 - 85 B
- 76 - 79 C+
- 70 - 75 C
- 60 - 69 D
- Below 59 F

VII. Policies:

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 the Learning Division, 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 and Classroom Misconduct:

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 who 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 going to Goins 127, 132, 134, 135, 131 or by phone: 539-7153 or TTY 694-6429. More information is available at http://www.pstcc.edu/sswd/. 