



## Course Number and Title: CET 244 Principles of Site Development

**Campus Location:**  
Georgetown, Stanton

**Effective Date:**  
2018-52

**Prerequisite:**  
CET 144, CET 240, (CET 225 and GIS 101) or CET 220 or concurrent, MAT 190

**Co-Requisites:**  
none

**Course Credits and Hours:**  
4.00 credits  
3.00 lecture hours/week  
3.00 lab hours/week

**Course Description:**

This course covers the fundamental concepts of site and subdivision planning. Consideration is given to zoning and subdivision ordinances and governmental regulations. Site design projects include design calculations and complete preliminary construction drawings for a conceptual subdivision. Students work with other related disciplines to model real industry collaboration.

**Required Text(s):**

Obtain current textbook information by viewing the [campus bookstore - https://www.dtcc.edu/bookstores](https://www.dtcc.edu/bookstores) online or visit a campus bookstore. Check your course schedule for the course number and section.

**Additional Materials:**  
None

**Schedule Type:**  
Classroom Course

**Disclaimer:**  
None

**Core Course Performance Objectives (CCPOs):**

1. Demonstrate proper drafting techniques. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1; CET 1, 4; CTO 1, 2)
2. Differentiate among the various drawings that make up a set of subdivision plans, and identify and explain the various items included in each drawing using proper terminology. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1, 4; CET 1, 4; CTO 1, 2)
3. Design and develop a residential, commercial, or mixed-use site plan applying zoning and subdivision ordinances and governmental regulations. CCC 1, 2, 3, 4, 5, 6; PGC: SET 1, 4; CET 1, 4; CTO 1, 2)
4. Assess a site to determine the feasibility for development. (CCC 1, 5; PGC: CET 1; SET 1; CTO 1, 3)
5. Design the vertical and horizontal elements of a road, and produce a preliminary traffic study and design roadway intersections. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1; CET 1; CTO 1, 3)
6. Develop a detailed surface model from 3D linework, objects, road profile, and sections. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1; CET 1, 4; CTO 1, 2)
7. Calculate critical design elevations for proposed utilities such as storm sewer, sanitary sewer, and water service. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1; CET 1; CTO 1, 3)
8. Formulate all design computations necessary to produce subdivision plans. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1; CET 1, 4; CTO 1, 2, 3)
9. Produce design plans from a CADD site model. (CCC 1, 2, 3, 4, 5, 6; PGC: SET 1, 3, 4, 6; CET 1, 4, 5; CTO 1, 2, 4)
10. Demonstrate professional and ethical conduct as expected in industry. (CCC 1, 2, 3, 4, 5, 6; PGC: CET 1, 4, 5; SET 1, 3, 4, 6; CTO 1, 2, 4)

See Core Curriculum Competencies and Program Graduate Competencies at the end of the syllabus. CCPOs are linked to every competency they develop.

## Measurable Performance Objectives (MPOs):

Upon completion of this course, the student will:

1. Demonstrate proper drafting techniques.
  1. Identify the proper shape of the layout.
  2. Differentiate the line types which are appropriate.
  3. Categorize the lettering type, size, and location.
  4. Apply the proper paper size and scale.
  5. Use the computer aided design (CAD) software settings to provide the appropriate settings for the design or drawing.
2. Differentiate among the various drawings that make up a set of subdivision plans, and identify and explain the various items included in each drawing using proper terminology.
  1. Research and determine the drawings needed for the design based on the regulatory agency criteria.
  2. Research and identify the appropriate plan breakdown for the design.
  3. Determine what plans are not needed in the drawing set.
  4. Identify an appropriate numbering system for the plan sheets.
  5. Identify the various items that are included in each plan sheet using the appropriate terminology.
3. Design and develop a residential, commercial, or mixed-use site plan applying zoning and subdivision ordinances and governmental regulations.
  1. Identify the role of various government agencies in zoning and subdivision regulations.
  2. Explain the functions of zoning and subdivision regulations.
  3. Identify the zoning requirements and their restrictions.
4. Assess a site to determine the feasibility for development.
  1. Develop a field report.
  2. Create a feasibility study.
  3. Analyze the site to determine the sustainable site design applications.
5. Design the vertical and horizontal elements of a road, and produce a traffic study and design roadway intersections.
  1. Identify horizontal curves used in the design.
  2. Calculate the necessary horizontal curve data.
  3. Identify any vertical curves required in the design.
  4. Calculate the necessary vertical curve data, including the elevations of the high points and low points of the curves.
  5. Produce a traffic study that gives the necessary information for the design.
  6. Produce drawings based on Delaware Department of Transportation (DelDOT) design criteria for the entrance or intersections.
6. Develop a detailed surface model from 3D linework, objects, road profile, and sections.
  1. Identify the linework, profiles and sections involved.
  2. Determine the area of the surface model.
  3. Draw the surface model clearly showing high points, low points, and the correct contour spacing.
  4. Incorporate any additional topographic data collected, if applicable.
7. Calculate critical design elevations for proposed utilities such as storm sewer, sanitary sewer, and water service.
  1. Determine the outfall elevation of the proposed design.
  2. Design the grading of the project based on the outfall.
  3. Differentiate the intermediate grades of the project.
  4. Formulate the elevations of the sewer pipes based on the invert elevation of the structure.
  5. Construct the elevations of the sewer manholes allowing for the minimum cover depth of the pipe and the allowable elevations of the cross flow of the manholes.
  6. Interpret the location and elevation of all water pipes based on their location to the sewer or drain pipes and frost cover depth.
8. Formulate all design computations necessary to produce subdivision plans.
  1. Compute the subdivision design layout using bearing and distances of the overall layout of the parcel as well as individual lot layouts.
  2. Design the grading of all streets, utilities, and lots based on the design parameters of the regulatory agencies identifies as well the physical design constraints in the field.
  3. Design the storm water management system based on the local regulatory agency guidelines.
  4. Determine the cuts and fill quantities based on the existing and proposed elevations of design and the existing elevations.
9. Produce design plans from a CADD site model.
  1. Design the site layout using the existing topographical drawing.
  2. Create the grades of the site, including using spot elevations where needed.
  3. Integrate the design, water, and sewer using the existing topographical data.
  4. Design the stormwater management system.
10. Demonstrate professional and ethical conduct as expected in industry.
  1. Identify the need for self-discipline and time management in technical industries.
  2. Communicate and function effectively as a member of a team.

**Evaluation Criteria/Policies:**

Students must demonstrate proficiency on all CCPOs at a minimal 75 percent level to successfully complete the course. The grade will be determined using the Delaware Tech grading system:

92	-	100	=	A
83	-	91	=	B
75	-	82	=	C
0	-	74	=	F

Students should refer to the [Student Handbook - https://www.dtcc.edu/handbook](https://www.dtcc.edu/handbook) for information on the Academic Standing Policy, the Academic Integrity Policy, Student Rights and Responsibilities, and other policies relevant to their academic progress.

**Final Course Grade:**

Calculated using the following weighted average

Evaluation Measure	Percentage of final grade
Class & Lab Assignments (Formative)	20%
Final Presentation (Summative)	30%
Final Plan Submittal (Summative)	30%
Professionalism Assessment (Summative)	10%
Homework (Formative)	10%
TOTAL	100%

**Core Curriculum Competencies (CCCs are the competencies every graduate will develop):**

1. Apply clear and effective communication skills.
2. Use critical thinking to solve problems.
3. Collaborate to achieve a common goal.
4. Demonstrate professional and ethical conduct.
5. Use information literacy for effective vocational and/or academic research.
6. Apply quantitative reasoning and/or scientific inquiry to solve practical problems.

**Program Graduate Competencies (PGCs are the competencies every graduate will develop specific to his or her major):****CETAASCET:**

1. Apply the knowledge, techniques, skills, and applicable tools of the discipline to engineering activities, including but not limited to site development, hydraulics and hydrology, grading, and structural systems.
2. Conduct standardized field and laboratory testing on civil engineering project materials.
3. Select appropriate materials and estimate material quantities for technical projects.
4. Use graphic techniques and productivity software to produce engineering documents.
5. Demonstrate a commitment to quality, timeliness, professional development, and continuous improvement.

**CETAASSET:**

1. Apply the knowledge, techniques, skills, and applicable tools of the discipline to engineering and surveying activities, including but not limited to site development, hydraulics and hydrology, grading, and structural systems.
2. Conduct standardized field and laboratory testing on civil engineering project materials.
3. Select appropriate materials and estimate material quantities for technical projects.
4. Use graphic techniques and productivity software to produce engineering documents.
5. Integrate appropriate surveying methods for land measurement and/or construction layout and the acquisition of spatial data in accordance with the laws and regulations pertaining to Professional Land Surveying.
6. Demonstrate a commitment to quality, timeliness, professional development, and continuous improvement.

**CETAASCTO:**

1. Apply the knowledge, techniques, skills, and applicable tools of the discipline to engineering activities, including but not limited to site development, hydraulics and hydrology, grading, and structural systems.
2. Use graphic techniques and productivity software to produce engineering documents.
3. Apply fundamentals of science and mathematics to solve engineering problems.
4. Demonstrate a commitment to quality, timeliness, professional development, and continuous improvement.

**Disabilities Support Statement:**

The College is committed to providing reasonable accommodations for students with disabilities. Students are encouraged to schedule an appointment with the campus Disabilities Support Counselor to request an accommodation needed due to a disability. A listing of campus Disabilities Support Counselors and contact information can be found at the [disabilities services - https://www.dtcc.edu/disabilitysupport](https://www.dtcc.edu/disabilitysupport) web page or visit the campus Advising Center.