



Course Number and Title: NRG 109 Solar Construction and Standards

Campus Location:

Georgetown, Dover, Stanton

Effective Date:

2018-51

Prerequisite:

NRG 108 or concurrent, SSC 100 or concurrent

Co-Requisites:

None

Course Credits and Hours:

1.00 credits

1.00 lecture hours/week

1.00 lab hours/week

Course Description:

This course investigates industry standards as applied to modern building construction. The student is introduced to the construction industry to ensure safety in the installation of solar photovoltaic and solar thermal systems. Hands-on use of tools, methods, and materials common to light construction are introduced.

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:

Scientific calculator

Schedule Type:

Classroom Course

Disclaimer:

None

Core Course Performance Objectives (CCPOs):

1. Engage in professional behavior. (CCC 1, 3, 4, 5)
2. Identify and discuss building codes and standards that apply to solar installations. (CCC 2, 5; PGC SOL 6)
3. Review common roofing systems in order to identify structural members adequate for system mounting and appropriate penetration techniques. (CCC 2, 3, 5, 6; PGC SOL 6)
4. Determine scaffolding, rigging, and lifting requirements for solar panels and components. (CCC 1, 2, 3, 6; PGC SOL 6, 7)

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. Engage in professional behavior.
 1. Demonstrate punctuality when attending class, participating in off-site projects, and submitting assignments.
 2. Communicate using industry-appropriate language in presentations, reports, and homework.
 3. Demonstrate appropriate professional behavior when working with others.
2. Identify and discuss building codes and standards that apply to solar installations.
 1. Explain the difference between a code and a standard as it applies to building construction.
 2. Review the International Building Codes as they apply to residential and commercial buildings, and discuss the similarities and differences.
 3. Review the National Fire Protection Association Code, and identify the sections that apply to solar installations.
 4. Discuss the code inspection and enforcement system as they apply to solar installation, and indicate the authorities having jurisdiction (AHJs) at a given location.
3. Review common roofing systems in order to identify structural members adequate for system mounting and appropriate penetration techniques.
 1. Identify roof condition evaluation criteria as defined by the American Society of Home Inspectors (ASHI).
 2. Identify the various types of residential and commercial roof construction.
 3. Identify the materials and methods used in roofing.
 4. Explain how to make various roof projections watertight.
 5. Explain the purpose of flashing.
4. Determine scaffolding, rigging, and lifting requirements for solar panels and components.
 1. Review the American National Standards Institute (ANSI) B30.9 as it applies to solar installation practices.
 2. Explain basic rigging and hoisting techniques and safety practices.

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.

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):

1. Utilize building systems and energy technology hardware and software to gather data on building lighting systems operation and energy consumption.
2. Calculate, analyze, and verify the energy use of buildings based upon the interaction of energy consuming building systems.
3. Evaluate residential buildings and make recommendations for optimized building performance and occupant comfort.
4. Prepare and present technical reports.
5. Analyze the economic, environmental, and business implications of potential energy measures.
6. Perform preliminary and in depth site and customer sustainability evaluation of potential applications for solar use.
7. Design and calculate the output of an optimal site-specific array by deriving panel configuration and specifying components.

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.