

**NEWARK COLLEGE OF ENGINEERING**

**SYLLABUS AND COURSE INFORMATION**

**Course Name:** Solar Photovoltaic Site Planning and System Installation

**Course Number:** ECET 414

**Course Structure:** 2-2-3 (lecture hr/wk – lab hr/wk – course credits)

**Course Description:** This course covers the following topics on solar photovoltaic (PV) systems: introduction to renewable energy and PV systems, solar thermal systems, solar radiation, sun path characteristics, panel installation, and troubleshooting. Moreover, the identification and analysis of a PV array site as well as the development of a site layout are discussed with emphasis on the implementation of the associated electrical codes and safety rules. This course will prepare the students for the North American Board of Certified Energy Practitioners (NABCEP) test for certified solar PV system installer.

**Prerequisites:** (ECET 205 or ECET 329) and Junior or Senior Standing

**Corequisites:** None

**Required, Elective,  
or Selected Elective:** Elective

**Required Materials:** **Text:** Name: Solar Photovoltaic Basics: A Study Guide for the NABCEP Entry Level Exam  
Author: Mike Meyers  
Year: 2015  
ISBN: 978-0-415-71335-1

**Course Outcomes:** By the end of the course students are able to:

1. Learn solar energy systems, DC/AC solar PV systems, solar thermal systems, and solar PV/thermal industries.
2. Learn solar irradiance and sun path characteristics.
3. Learn solar panel orientation and site measurements.
4. Perform array site planning.
5. Describe the safety rules of PV systems, draw circuit diagrams, assemble a PV array and a mounting system, and install conductors.
6. Select and install grounding and surge protection systems.
7. Perform pre-startup PV system checkout and initial startup, and connect/tie an interactive PV system into the grid.
8. Connect, operate, and troubleshoot DC stand-alone and AC stand-alone/grid-tied PV systems with/without battery backup.
9. Learn, connect, operate, and troubleshoot the solar thermal systems, interpret the component specifications, and learn their safety rules.

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**Class Topics:** Solar PV Systems                      Solar PV Installation  
Solar thermal Systems                      Solar PV/thermal system Troubleshooting  
Solar PV Site Planning                      Electrical Codes and Safety Rules

**Academic Integrity:** Academic Integrity is the cornerstone of higher education and is central to the ideals of this course and the university. Cheating is strictly prohibited and devalues the degree that you are working on. As a member of the NJIT community, it is your responsibility to protect your educational investment by knowing and following the academic code of integrity policy that is found at:  
<http://www5.njit.edu/policies/sites/policies/files/academic-integrity-code.pdf>

Please note that it is my professional obligation and responsibility to report any academic misconduct to the Dean of Students Office. Any student found in violation of the code by cheating, plagiarizing or using any online software inappropriately will result in disciplinary action. This may include a failing grade of F, and/or suspension or dismissal from the university. If you have any questions about the code of Academic Integrity, please contact the Dean of Students Office at [dos@njit.edu](mailto:dos@njit.edu)

**Modification to Course:** The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.

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**Course Coordinator:** Daniel Brateris

**Updated:** 26 January 2022