

**NEWARK COLLEGE OF ENGINEERING**

**SYLLABUS AND COURSE INFORMATION**

- Course Name:** Power Generation and Distribution
- Course Number:** ECET 412
- Course Structure:** 2-2-3 (lecture hr/wk – lab hr/wk – course credits)
- Course Description:** Electrical power generation systems, including hydroelectric, steam, and nuclear plants. Substation and transmission line topics are included as part of the distribution system.
- Prerequisites:** ECET 205 or ECE 271
- Corequisites:** None
- Required, Elective, or Selected Elective:** Elective
- Required Materials:** **Text:** Name: Power System Analysis & Design  
Author: Glover, Sarma, and Overbye  
Year: 2011  
ISBN: 978-1-111-42577-7

- Course Outcomes:** By the end of the course students are able to:
1. Gain a basic understanding of the operation of a power system grid from the generator to the customer.
  2. Analyze balanced three phase power circuits, the power triangle, and power factor
  3. Understand the electrical aspects of motors and generators
  4. Understand basic load flow analysis using the per unit system
  5. Evaluate the impact of different transmission line parameters and the impact to power flow.
  6. Analyze power circuits for system protection, fault studies, and equipment selection.
  7. Understand and interpret electric utility reliability standards based on inside plant (Substation) design and outside plant feeder arrangements.
  8. Demonstrate ability to read-ahead course materials in advance of class lecture, and report both key points and issues to instructor before class.

<b>Class Topics:</b>	Power Generation	Power Transmission
	Power Distribution	3 Phase Circuits & The Power Triangle
	Power System Design	Power Flow
	Fault Analysis	System Protection
	Substation Design	Reliability

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**Student Outcomes:** The Course Learning Outcomes support achievement of the following Student Outcomes from the ETAC of ABET Criterion 3 requirements.

**Student Outcome a:** An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined engineering technology activities.

**Related Course Outcome:** 1

**Student Outcome l:** The application of circuit analysis and design, computer programming, associated software, analog and digital electronics, and microcomputers, and engineering standards to the building, testing, operation, and maintenance of electrical/electronic(s) systems.

**Related Course Learning Outcomes:** 2 & 6

**Student Outcome n:** The ability to analyze, design, and implement one or more of the following: control systems, instrumentation systems, communications systems, computer systems, or power systems.

**Related Course Learning Outcomes:** 5 & 7

**Academic Integrity:** NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. Please visit the Dean of Students website at <http://www.njit.edu/doss> for a list of student policies relating to academic integrity and student conduct.

**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.

**Prepared By:** Daniel Brateris

**Course Coordinator:** Daniel Brateris