RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

ELEC 202 – Electrical Transmission and Distribution

I. Basic Course Information

A. Course Number and Title: ELEC 202 – Electrical Transmission and Distribution

B. New or Modified Course: New Course

C. Date of Proposal: Semester: Spring Year: 2017

D. Effective Term: Fall 2017

E. Sponsoring Department: Science and Engineering

F. Semester Credit Hours: 4

G. Weekly Contact Hours: Lecture: 3
Laboratory: 2
Out of class student work per week: 7

H. Prerequisites: ELEC 102 Electrical Fundamentals II

I. Laboratory Fees: Yes

J. Name and Telephone Number or E-Mail Address of Department Chair at time of approval: Sarah Imbriglio, 908-526-1200 Ext. 8241; sarah.imbriglio@raritanval.edu

II. Catalog Description

Prerequisite: ELEC 102 Electrical Fundamentals II

This course will focus on the generation and transmission of electricity and the use of substations, distribution transformers, and transmission lines. Various types of voltage, system protections, system operations, and maintenance will also be discussed. Students will perform various connections: delta-wye, open neutral, and closed neutral.

III. Statement of Course Need

A. This course is designed to introduce students to the electrical power system, generating and transmitting electricity, understanding substation operations, and performing system protection analysis. Understanding of these concepts and analysis techniques is necessary for completion of the Electric Utility Technology AAS degree.

B. The course has a lab component to provide students with additional learning opportunities by using hands-on applications and experimentation.

C. This course meets a program requirement for the Electric Utility Technology AAS degree.

IV. Place of Course in College Curriculum

A. Free Elective.
B. This course meets a program requirement for the Electric Utility Technology AAS degree.
C. To see course transferability: a) for New Jersey schools, go to the NJ Transfer website, www.njtransfer.org; b) for all other colleges and universities, go to the individual websites.

V. Outline of Course Content

A. Electrical Energy Consumption
B. The Electrical Power System
C. Electricity and Magnetism
D. Generating Electricity
E. Transmitting Electricity
F. Sub Transmission and Sub Stations
G. Primary Distribution
H. Distribution Transformers
I. Secondary Services and Metering
J. System Protection
K. Street Lighting
L. System Operations and Maintenance
M. Effects of Deregulation and Competition on Power Delivery

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

At the completion of the course, students will be able to:

1. Demonstrate an understanding of generating and transmitting electricity. (GE-NJ 3)
2. Describe the operation of a substation and a power system. (GE-NJ 3, 4)
3. Apply basic laboratory techniques that are relevant to transmitting and distributing electricity to a given site. (GE-NJ 3, 4*)

*embedded critical thinking

B. Course Learning Outcomes:

At the completion of the course, students will be able to:

1. Explain the electrical power system.
2. Perform various Delta and Wye transformer connections.

C. Assessment Instruments

Given the outcomes described above, LIST which of the following assessment methods may be used; please note any instruments that will be ***required*** to assess outcomes as listed above (e.g., research papers for information literacy):

1. laboratory reports
2. homework assignments
3. exams
4. class participation
5. discussions and presentations
6. notebook
7. computer programs

VII. Grade Determinants

What factors may enter into the determination of the final? LIST the grade determinants. Please note any grade determinants that will be *required* for the course. For example:

A. homework assignments
B. projects
C. lab reports
D. exams
E. presentations and discussions

Given the goals and outcomes described above, LIST the primary formats, modes, and methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. small-group work
C. computer-assisted instruction

D. documentaries/videos
E. laboratory experiments
F. student oral presentations
G. student collaboration
H. independent study

VIII. Texts and Materials

LIST which of the following types of course materials will be used. Specify title and publication information about textbooks and any other major text sources or other materials.

A. Introduction to Electric Power Distribution, 2nd Edition, by Wayne Beaty, Alexander Publications
B. film and video
C. other web and computer-based sources

(Please Note: The course outline is intended only as a guide to course content and resources. Do not purchase textbooks based on this outline. The RVCC Bookstore is the sole resource for the most up-to-date information about textbooks.)

IX. Resources

A. Libraries
B. Computer with online access for research

X. Honors Options [if relevant]: no honors option