RARITAN VALLEY COMMUNITY COLLEGE
ACADEMIC COURSE OUTLINE

UTIL-201 Overhead Line/Substation Technology III

I. Basic Course Information

A. Course Number and Title: UTIL-201 Overhead Line/Substation Technology III

B. New or Modified Course: MODIFIED

C. Date of Proposal: Semester: Fall Year: 2020

D. Effective Term: FALL 2021

E. Sponsoring Department: SCIENCE AND ENGINEERING

F. Semester Credit Hours: 5

G. Weekly Contact Hours: Lecture: 2
Directed Practice: 20 hours per week

H. Prerequisite: UTIL-102 Overhead Line/Substation Technology II

I. Laboratory Fees: NONE

J. Name and Telephone Number or E-Mail Address of Department Chair and Divisional Dean at time of approval:
Department Chair: Ed Carr, Edward.Carr@raritanval.edu
Divisional Dean: Sarah Imbriglio, sarah.imbriglio@raritanval.edu

II. Catalog Description

Prerequisite: UTIL-102 Overhead Line/SubstationTechnology II
This course is the third in a four part series providing the student with the advanced knowledge and skills necessary to safely work in a supervised capacity on energized equipment and in an unsupervised capacity on de-energized equipment employed in the production and distribution of electrical energy. This course also introduces the student to power transformer testing, troubleshooting, alarm systems, circuit breaker troubleshooting, reclosers and sectionalizers, OCB maintenance and voltage regulators. Students will have supervised practical applications of electrical overhead line worker job duties in a setting under personal supervision of FirstEnergy personnel. Emphasis on skills required to identify, install, and maintain primary underground residential distribution (URD) equipment, including various methods of troubleshooting URD primary and secondary circuits. Grounding distribution circuits will also be

learned. Students will develop the knowledge and skill to safely perform rubber gloving assignments utilizing the insulate and isolate techniques, will perform various tasks while working on an energized three-phase circuit under controlled conditions. Safety topics include: fire extinguisher safety, temporary protective grounds, stored energy devices, and utilities protective service.

III. Statement of Course Need (need feedback from FirstEnergy)

A. UTIL 201 Overhead Line/Substation Technology III is required the first semester of the second year and builds on UTIL 102 Overhead Line/Substation Technology II. The course provides the students with the knowledge and skill to identify, install and maintain primary underground residential distribution (URD) equipment. New techniques and safety procedures will be learned.
This course is the third required in a sequence of four to provide the students with the necessary background to complete the requirements in the Electric Utility Program.

B. There is no lab component to this course.

C. This course is not designed for transfer.

IV. Place of Course in College Curriculum

A. This course meets a program requirement for the Electrical Utility Technology A.A.S.

B. 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. Underground Distribution

B. Use and Operation of Tools and Equipment

C. Single Line Diagrams

D. Fault Indicators

E. Transformer Connections

F. Gloving

G. Safety

VI. General Education and Course Learning Outcomes

A. General Education Learning Outcomes:

1. Communicate orders with dispatchers and conduct job briefings. (NJ-GE1)
2. Interpret diagrams shown in the AM/FM Symbology. (NJ-GE4)

B. Course Learning Outcomes:

1. Demonstrate proper use of tools and equipment, including Bayonet switch holders and
2. Install transformers, indicators and terminators..
3. Properly inspect protective equipment.
4. Demonstrate correct preparation of a load pick up tool.
5. Demonstrate proper use of capacitance meter.
6. Identify materials necessary to conduct a capacitor cap.

C. Assessment Instruments

A. Written Exams
B. Hands-on Assessment(s)
C. Observance of Safety Rules & Practices
D. Final Exam

VII. Grade Determinants

A. Job skill demonstrations and written examinations account for 80% of the student's final grade.
B. Attitude awareness accounts for 10% and includes the student's participation, safe work habits, teamwork, cooperation, and the ability to follow directions.
C. The final 10% accounts for the student's attendance record (both tardiness and absenteeism).

Primary formats, modes, and methods for teaching and learning that may be used in the course:

A. lecture/discussion
B. small group work
C. guest speakers
D. laboratory
E. student collaboration
F. demonstration

VIII. Texts and Materials

A. All materials will be provided by FirstEnergy

IX. Resources

A. Each student will be required to provide their own Linemen boots and flame retardant apparel.