COURSE INFORMATION FORM

DISCIPLINE  INTE
COURSE TITLE  Installation & Troubleshooting Underground Distribution Systems
CR.HR  3  LECT HR  1  LAB HR  4  CLIN/INTERN HR.  _______  CLOCK HR.  _______

CATALOG DESCRIPTION
The student will have a working knowledge of the different types of underground distribution systems, able to identify the types of cable used in underground distribution, describe proper cable installation procedures, demonstrate proper cable preparation techniques using manufacturers’ specifications for splicing and terminating cable, list safe work procedures and demonstrate the proper techniques for isolation and grounding underground cable sections.

PREREQUISITES
LINE 250

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)
Upon completion of this course, the student will be able to:
1. Demonstrate safe work practices.
2. Practice needed safety precautions.
3. Demonstrate knowledge of potential hazards.
4. Describe cable specifications for underground installations.
5. Install correct splices for underground cables.
6. Describe specifications and uses of conduit.
7. Describe specifications and purposes of manholes, transformer vaults, and trenches.
8. Demonstrate proper skills in terminating cables.
9. Describe how to troubleshoot primary/secondary faults.
GENERAL EDUCATION OUTCOMES (ESO)
Specify which general education outcomes, if any, are substantially addressed by the course. Numbers in parentheses identify the Expected Student Outcomes linked to the specific General Education Outcome.

Critical Thinking: Define, analyze and evaluate information, materials and data (ESO)
2. Construct valid inferences from facts, credible sources, experiences, anecdotes and values and belief systems (1, 2, 3, 9)
3. Unambiguously define problems and issues (1, 2, 3, 9)
4. Integrate information and see relevant relationships that broaden and deepen understanding (4, 7)

Natural and Physical Sciences:
A. Use the scientific method to develop and test hypotheses and to draw defensible conclusions (5, 6, 8)
C. Describe and apply current theoretical explanations of the origin of the physical universe and the laws governing it. (1, 2, 3)

PROGRAM-LEVEL OUTCOMES
CAREER AND TECHNICAL EDUCATION PROGRAM OUTCOMES
Specify which Career and Technical program outcomes, if any, are substantially addressed by the course by completing the “Career and Technical Education template” to show the relationship between course and program outcomes to assessment measures.

The student will demonstrate:
1. The ability to apply foundational skills in an industrial setting, safely and to industry guidelines.
2. Professional oral and written communication skills.
3. Thinking critically and applying problem-solving skills.
4. Competency in the entry-level skills required for graduation from Electric Utility Line Technician program.
5. Certified competency in electrical safety.

CLASS-LEVEL ASSESSMENT MEASURES
Student accomplishment of expected student outcomes will be assessed using the following measures. (Identify which measures are used to assess which outcomes.)

Written Tests: 1 – 9
Assignments: 1 – 9

Revised 1/26/10
Individual instructors may order this outline as fits the needs of their individual courses. In addition, they may place more emphasis on some areas than on others. What is assured is that this particular list is covered in the course. Other topics may be added to a course as the instructor sees fit, and as time and interest allow. An *asterisk can be used to mark an item as optional.

I. Safe work practices

II. Hazards
   A. Enclosed space
   B. Ventilation

III. Parts of an underground system
   A. Conduits or ducts
   B. Manholes and vaults
   C. Cables
   D. Transformers

IV. Cable
   A. Types
      1. Paper and Lead
      2. Shielded
      3. Primary and Secondary
   B. Terminations

V. Transformers
   A. Installation
   B. Maintenance