COURSE INFORMATION FORM

DISCIPLINE

INTE

COURSE TITLE

Transformer Theory and Installation

CR.HR  3  LECT HR  2  LAB HR  2  CLIN/INTERN HR.  ______  CLOCK HR.  ______

CATALOG DESCRIPTION

The student will gain a thorough knowledge of transformer theory and installation. Single-phase and three-phase configurations with different types of connections will be included. Topics will include: over voltage and over current protection, equipment grounding, cutout protection, proper cover-up techniques, lightning arrester application and installation, basic troubleshooting practices and current and potential transformers use and safety.

PREREQUISITES

INTE 110, LINE 106 & LINE 210

EXPECTED STUDENT OUTCOMES IN THE COURSE (ESO)

Upon completion of this course, the student will be able to:

1. Demonstrate safe work practices.
2. Demonstrate an understanding of the purpose of different types of transformers.
3. Demonstrate an understanding of transformer basics.
4. Select proper transformer for different applications using electrical calculations for selecting transformers.
5. Connect various types of transformers.
6. Describe the correct protection needed for transformer installation and maintenance.

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.

Quantitative Literacy and Mathematical Analysis (ESO)

E. Interpret and apply numeric information embedded in text or real-life situations (1, 2, 4, 6)
F. Interpret and apply numeric information presented in tables, charts and graphs (1, 3, 5)
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.

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 – 6
Assignments:  1, 5, 6
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. Transformer Safety and Introduction
   A. Purpose
   B. Transformer applications
   C. Safety considerations
III. Transformer basics
   A. Components
   B. Core
      1. Turns ratio
      2. Backfeed
      3. Taps
      4. Polarity
      5. Connections
IV. Current Effect
   A. Load
   B. Secondary faults
V. Losses and Impedance
VI. Protection
   A. Sources of damage
   B. Fuses
   C. Underground protection
   D. Voltage suppression
   E. Neutral and ground
VII. Single phase transformers
VIII. 3-phase transformers
IX. Troubleshooting