## Course Outline

**DEPT.** ELEC  
**COURSE NUMBER:** 2240

**NUMBER OF CREDITS:** 3  
**Lecture:** 2  
**Lab:** 1  
**OJT:** 0

### Course Title:
Transformers

### Catalog Description:
Transformers describes basic transformer theory, construction, installation and troubleshooting of single phase and three phase transformers. Examine types of transformers including isolation, autotransformer and instrumentation transformers.

### Prerequisites or Necessary Entry Skills/Knowledge:
Prerequisite: ELCO 1100 or ELCO1110

### Fulfills MN Transfer Curriculum Area(s)
(Leave blank if not applicable)

- Goal 1: Communication: By meeting the following competencies:
- Goal 2: Critical Thinking: By meeting the following competencies:
- Goal 3: Natural Sciences: By meeting the following competencies:
- Goal 4: Mathematics/Logical Reasoning: By meeting the following competencies:
- Goal 5: History and the Social and Behavioral Sciences: By meeting the following competencies:
- Goal 6: The Humanities and Fine Arts: By meeting the following competencies:
- Goal 7: Human Diversity: By meeting the following competencies:
- Goal 8: Global Perspective: By meeting the following competencies:
- Goal 9: Ethical and Civic Responsibility: By meeting the following competencies:
- Goal 10: People and the Environment: By meeting the following competencies:

### Topics to be Covered
- Single phase transformer construction, operation and calculations
- Three phase transformer construction, operation and calculations
- Single phase and three phase transformer connections

### Student Learning Outcomes
- Identify types of transformers
- Describe magnetic induction as it relates to transformer theory
- Explain step-up/step-down transformers
<table>
<thead>
<tr>
<th>Competencies</th>
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<tbody>
<tr>
<td>Calculate power, voltage and current in a transformer circuit</td>
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<td>Design transformer connection diagrams</td>
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<td>Connect various types of transformers most commonly used in the electrician field</td>
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<tr>
<td>Prove transformer operation</td>
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<tr>
<td>Test values of voltage, current and power in a transformer circuit</td>
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<tr>
<td>Apply National Electrical Code standards</td>
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**Is this course part of a transfer pathway:** Yes ☐ No ☒

*If yes, please list the competencies below*

Revised Date: 1/1/2023