

**Course Information**

<b>Course Title</b>	Power Generation Instrumentation
<b>Course Prefix, Num. and Title</b>	ELMT 2452 - Power Generation Instrumentation
<b>Division</b>	Technology and Business
<b>Department</b>	Electronics Engineering Technology
<b>Course Type</b>	WECM Course
<b>Course Catalog Description</b>	Study of the instruments and control systems used in the power generation industry; including terminology, power generation variables, piping and instrumentation diagrams (P&ID), control loop diagrams and basic troubleshooting.
<b>Pre-Requisites</b>	CETT 1409, and INTC 1350, and PTAC 2436
<b>Co-Requisites</b>	Credit for or concurrent enrollment in INTC 1457 and PTAC 2436

**Semester Credit Hours**

<b>Total Semester Credit Hours (SCH): Lecture Hours:</b>	4:3:3
<b>Lab/Other Hours</b>	
<b>Equated Pay Hours</b>	4.5
<b>Lab/Other Hours Breakdown: Lab Hours</b>	3
<b>Lab/Other Hours Breakdown: Clinical Hours</b>	0
<b>Lab/Other Hours Breakdown: Practicum Hours</b>	0
<b>Other Hours Breakdown</b>	0

**Approval Signatures**

<b>Title</b>	<b>Signature</b>	<b>Date</b>
<b>Prepared by:</b>		
<b>Department Head:</b>		
<b>Division Chair:</b>		
<b>Dean/VPI:</b>		
<b>Approved by CIR:</b>		

## Additional Course Information

**Topical Outline:** Each offering of this course must include the following topics (be sure to include information regarding lab, practicum, and clinical or other non-lecture instruction).

Lecture - 3hrs/wk

The lecture entails in-depth coverage of instrumentation and control systems used in the power generation industry; including terminology, power generating variables, piping and instrumentation diagrams (P&ID), control loop diagrams and basic troubleshooting.

Lab - 3hrs/wk

The course will feature an integrated lab depicting the function of the various instruments used in the power generation industry, including process control elements in a control loop, use of P&IDs and basic troubleshooting. Students gain hands-on experience in the area of instrumentation and control systems.

Reviews & Exams are included within lecture hours.

### Course Learning Outcomes:

**Learning Outcomes – Upon successful completion of this course, students will:**

1. Explain the function of the various instruments used in the power generation industry.
2. Diagram and process control elements in a control loop.
3. Apply terms and symbols used in instrumentation.
4. Perform basic troubleshooting.
5. Select/utilize the correct test equipment to verify system operational parameters for problem analysis.
6. Isolate system faults and repair.
7. Demonstrate component repair and replacement techniques.
8. Analyze system/component failures and MTBF.

**Methods of Assessment:**

Assessment of outcomes 1, 2, 3, 4, 5, 6, 7, and 8 will be completed through periodic written quizzes, exams and hands-on laboratory exercises.

### Required text(s), optional text(s) and/or materials to be supplied by the student:

Course specific text will be specified and/or industry specific student handouts will be provided for each class session. Scientific calculators are also required.

### Suggested Course Maximum:

30/15

### List any specific or physical requirements beyond a typical classroom required to teach the course.

Power generation industry related electrical maintenance lab. Lab will only accommodate 15 students at one time.

**Course Requirements/Grading System:** Describe any course specific requirements such as research papers or reading assignments and the generalized grading format for the course.

Quizzes, homework assignments, projects, and class participation: 25%

Lab and Cross Disciplinary Skills (work ethic, safety, teamwork, housekeeping, attitude): 25%

Mid-term Exam: 25%

Final Exam: 25%

90 to 100: A

80 to 89: B

70 to 79: C

60 to 69: D

0 to 59: F

Note: For the additional NUCP certificate, the student must complete the course with a minimum of 80%.

### Curriculum Checklist:

- Administrative General Education Course** (from ACGM, but not in WCJC Core) – No additional documents needed.
- Administrative WCJC Core Course.** Attach the Core Curriculum Review Forms
  - Critical Thinking
  - Communication
  - Empirical & Quantitative Skills
  - Teamwork
  - Social Responsibility
  - Personal Responsibility
- WECM Course** -If needed, revise the Program SCANS Matrix and Competencies Checklist