

# Electrical Power Technology A.A.S

## — Metering Technology Option

### Program Description

This option is designed to train students to install, maintain, program and test a large variety of electronic and mechanical metering devices serving residential, commercial and industrial customer. It also provides training in safe, efficient and timely installation and maintenance of electric metering devices and associated equipment to insure accurate billing of customer load.

### Employment Information

According to the U.S. Department of Labor Bureau of Statistics, "Job opportunities in this field should be best for applicants with an associate degree in electronics, certification, and related experience." Employment of electrical and electronics installers and repairers, powerhouse, substation, and relay is expected to grow 12 percent by 2018, as power plant expansion into newer, energy efficient green technologies and the retirement of a significant portion of the current workforce spur demand for employment.

### Degree Awarded

Associate in Applied Science

### For More Information Contact:

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### Technical Occupational Specialty

<input type="checkbox"/>	EET	1104	Fundamentals of Electricity
<input type="checkbox"/>	EET	1244	Circuit Analysis
<input type="checkbox"/>	EPT	1103	Print Reading
<input type="checkbox"/>	EPT	1123	Electrical Systems Components
<input type="checkbox"/>	EPT	2063	Electrical Systems Protection
<input type="checkbox"/>	EPT	2503	Transformers
<input type="checkbox"/>	EPT	2133	Fundamentals of Metering
<input type="checkbox"/>	EPT	2333	Single and Polyphase Metering
<input type="checkbox"/>	EPT	2533	Advanced Metering Techniques
<input type="checkbox"/>	EPT	2603	Capstone/Advanced Techniques/Problems

### 32 Credit Hours

Date	Institution

### Support & Related Courses

<input type="checkbox"/>	CIS	1113	Computer Concepts with Applications
<input type="checkbox"/>	FPST	1313	Industrial Safety
<input type="checkbox"/>	PTDT	2013	Commercial Driver's License Training
<input type="checkbox"/>	<i>Elective - See Department head for approval</i>		

### 12 Credit Hours


### General Education Courses

<input type="checkbox"/>	ENGL	1113	English Composition I
<input type="checkbox"/>	ENGL	1213	English Composition II
<input type="checkbox"/>	<b>OR</b>		
<input type="checkbox"/>	ENGL	2333	Technical Report Writing
<input type="checkbox"/>	HIST	1483	U.S. History to 1865
<input type="checkbox"/>	<b>OR</b>		
<input type="checkbox"/>	HIST	1493	U.S. History Since 1865
<input type="checkbox"/>	MATH	1513	College Algebra
<input type="checkbox"/>	POLS	1113	American Government
<input type="checkbox"/>	SPCH	1113	Speech Communication

### 18 Credit Hours


### Total to Graduate

### 62 Credit Hours

Student Name:	_____
CWID:	_____
Counselor:	_____
Catalog 2012-2013	

## EPT AAS-METERING COURSE DESCRIPTIONS

### **\*CIS 1113 COMPUTER CONCEPTS WITH APPLICATIONS**

Provides students with an introduction to concepts and applications of the personal computer in business. Topics include spreadsheets, databases, word processing, ethics, vocabulary, Internet skills and file system management. Theory and hands-on computer instruction is included. This introductory course is intended for students with existing computer skills. Prerequisite: READ 0033 or [R].

### **EET 1104 FUNDAMENTALS OF ELECTRICITY**

Elementary principles of electricity covering basic electric units, OHM's law, Kirchoff's law, circuit solutions, network solutions, magnetism, inductance and capacitance. Lab: two hours per week. Co-requisite: MATH 1513.

### **EET 1244 CIRCUIT ANALYSIS I**

The study of transient analysis and network theorems for electric circuits. This course introduces resonant circuits, filters, AC power and computer aided circuit analysis techniques. Lab: two hours per week. Prerequisite: EET 1104. Co-requisite: MATH 1613.

### **EPT 1103 PRINT READING**

This course gives students an introduction to the different schematics used in power plant operations and electrical transmission and distribution systems. Students will gain an understanding of the standard symbols used in the various systems schematics and how to read them. Students learn how to read basic piping and instrumentation diagrams, and how to interpret single line electrical diagrams. Students finish the course by studying electrical system diagrams beginning at the generator and following through to the distribution system. **Lab 2 hours per week.**

### **EPT 1123 ELECTRICAL SYSTEMS COMPONENTS**

This course takes an in-depth look into the components used in the transmission of electricity. Students begin with a study of switchyards and substations, and then learn the operation of transformers, circuit breakers, regulators, capacitor banks, battery banks, tap changers, disconnects, current and potential transformers and lightning arrestors. Students also study the various types of electrical conductors, structures and insulators used in the transmission of electricity. Finally, students learn the components, which make up a typical substation and how it feeds a distribution network that supplies customers with electricity. Lab 2 hours per week.

### **EPT 2063 ELECTRICAL SYSTEMS PROTECTION**

This course covers protection fundamentals, philosophies and principles used to protect the electrical system, beginning with the generator itself. Various types of relays, input sources and system grounding are also covered. Lab 2 hours per week.

### **EPT 2133 FUNDAMENTALS OF METERING**

This course introduces students to the fundamental of metering, such as terminology and basic principles of meters. Students learn basic math needed in metering and review of basic electricity and magnetism principles. The students are introduced to meter testing equipment, meter diagrams and standards and learn technical data and how to read watt hours and demand meters.

### **EPT 2333 SINGLE/POLYPHASE METERING**

Metering Single and polyphase metering including meter design, adjustments, compensations and applications will be studied in this course. Power factor analyzers, high amperage CT cabinets, meter demand theory, demand registers, and testing and maintenance of thermal demands will also be studied.

### **EPT 2503 TRANSFORMERS**

This course begins with a review of basic transformer design and operation. Students will study 3- phase transformers, single phase loads for 3-phase transformers, and the different connections used such transformers. The course introduces students to installation procedures and maintenance procedures for transformers. 2 hour of lab per week.

### **EPT 2533 ADVANCED METERING TECHNIQUES**

This course will introduce students to various metering system designs and application options. The student will study the metering system components, associated wiring configurations and instrument transformer variations. Topics will include ratio, burden, and correction factor calculations; functional testing, and calibration procedures as well as safe installation procedures. Also included are cogeneration metering, and principles of load management and associated equipment. Lab 2 hours per week.

### **EPT 2603 CAPSTONE**

This course will include topics that have not been covered in the previous courses and will include interview skills, evaluation of the job market and employment opportunities. This course will be normally be taken in the students last semester.

### **FPST 1313 INTRODUCTION TO OCCUPATIONAL SAFETY**

A course in industry safety, giving an overview of state and national regulations in safety. The course will also cover the basic areas of an industrial safety program, as well as reporting, investigating and analyzing the results. prerequisite: ENGL 1113.

### **PTDT 2013 DRIVER SAFETY AND CDL TRAINING**

This course will prepare students to drive commercial vehicles in a safe manner and help students prepare for the commercial driver's license