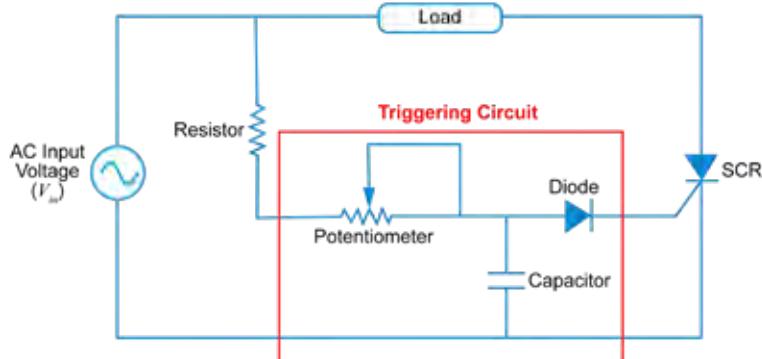


# Active Electronic Circuit Basics

*eLearning courses designed to increase productivity and profits*



# **Learning Made Simple, Visual, and Interactive**

The THORS Active Electronic Circuit Basics course focuses on electronic circuits that can be built using active electronic components, such as transistors. This course covers power converters that are built using active electronic components, such as a diode or Silicon Controlled Rectifier (SCR). Power converters classified based on the power conversion method and the power supply design are also discussed in detail. Interactive quizzes are integrated to enhance the learning experience by allowing learners to assess their comprehension of the visually stimulating content.

*Credit Hours* **2**

## Learning Objectives

- 💡 Recognize the different active electronic circuits built using transistors, such as a transistor switch, relay driver, beeper driver, motor driver, emitter follower, common emitter follower, transistor oscillator, astable multivibrator, and voltage regulator.
- 💡 Identify the applications of transistor-based gates, such as NOT gate, AND gate, NAND gate, OR gate, and NOR gate.
- 💡 Describe how power converter circuits are built using diodes and Silicon Controlled Rectifiers (SCRs).
- 💡 Distinguish the types of power converters classified based on their power conversion method and power supply design.
- 💡 Describe the working principles of AC to DC converters, DC to AC converters, AC to AC converters, and DC to DC converters.

## Table of Contents

## I. Transistor

- Transistor Switch
- Relay Driver
- Beeper Driver
- Motor Driver
- Emitter Follower
- Common Emitter Amplifier
- Transistor Oscillator
- Astable Multivibrator
- Voltage Regulator
- Transistor-Based Gate
  - NOT Gate
  - AND Gate

## I. Transistor (continued)

- ❑ NAND Gate
- ❑ OR Gate
- ❑ NOR Gate

## II. Power Converter

- **Diode**
  - Full Wave Rectifier
  - Inductive Load Protection
  - Diode-Based Battery Backup
  - Voltage Clamper
  - Zener-Based Voltage Reference

## II. Power Converter (continued)

- **Silicon Controlled Rectifier (SCR)**

- SCR-Based Controller
- Crowbar Protection
- Triac-Based Fan Regulator

• **Types**

- Based on Power Conversion Method
  - AC to DC Converter
  - DC to AC Converter
  - AC to AC Converter
  - DC to DC Converter
- Based on Power Supply Design
  - Linear Power Supply
  - Switch Mode Power Supply (SMPS)

