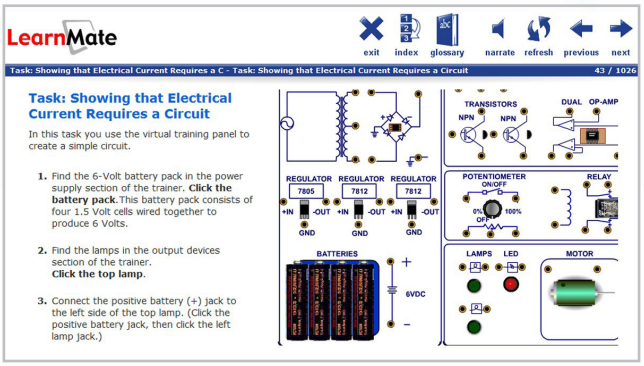
Electrical Control & Electronics

Electrical Control and Electronics courses introduce basic concepts of electricity and electrical systems. Students design circuits using fixed components connected with jumper wires to learn about magnetism, current, alternating and direct current, series and parallel circuits, rectification and regulation of current.



Course Information

Type	Virtual, Lab
Languages	English
Units of measurement	Imperial; Metric
Hours of instruction	15

Electrical Systems

The training system emphasizes hands-on experiments involving AC/DC, magnetism, electrical components, and the design of series and parallel circuits.

Course Outline

- Introduction to Electricity
- Magnetism and Electromagnetism
- Electrical Power Supplies
- Instrumentation
- Output Devices
- Control Devices
- Circuit Protection
- Electrical Conditioners
- Electronic Conditioners
- Series Circuits
- Parallel Circuits
- Controlling Electrical Output
- Logic Gates

Lab Hardware Includes

- Electrical Panel with breadboard
  - Jumper wires
  - Patch cords
  - Magnetic switch
  - Multi-meter
  - Relay
  - Rheostat
  - Transistor
  - Resistor
  - Capacitor

Sensor Technology

Sensor Technology course teaches students how to design and assemble basic control circuits using sensors. This training system features SensorLine, a training panel with a number of devices that can be activated and controlled in various configurations.

Course Outline

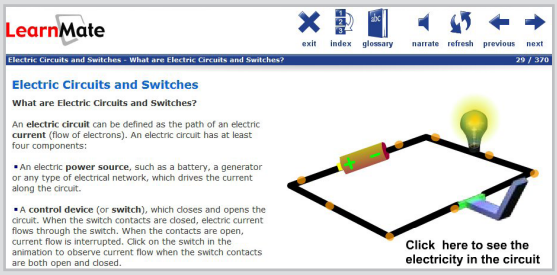
- Introduction to Sensors
- Contact Sensors
- Digital Light Sensors
- Analog Light Sensors
- Reed Switch Sensors
- Logic AND Circuits
- Logic OR Circuits
- Relays - Logic NOT Circuits
- Inductive Proximity Sensors - Introduction
- Inductive Proximity Sensors - Applications
- Pressure Sensors
- On-Off Control System
- Using an Optic Fiber as a Conductor
- Control Circuit Design

Lab Hardware Includes

- Analog and Digital Sensors Aluminum Training Panel (23.6" x 22" 600mm x 560mm)
  - Inductive proximity sensor
  - Contact sensor
  - Magnetic reed sensor
  - Light sensor
  - Pressure sensor
  - Mounting plate
  - Buzzer
  - (2) lamps
  - Relay unit

Electrical Control & Electronics courses include LearnMate®, Intelitek's innovative e-learning platform. Self-paced interactive LearnMate content may be deployed stand-alone or through the robust learning management system (LMS). The LearnMate e-learning suite provides everything needed for the ultimate blended learning experience:

- SCORM-compliant interactive content
- Anytime, anywhere accessibility
- Student and class management
- Grade tracking
- Skill/competency reporting mapped to national academic skill standards



Fundamentals of Electronics

Fundamentals of Electronics course teaches you about circuits, semiconductors, diodes, and transistors, and their practical applications in everyday life.

Course Outline

- Introduction to Electronics
- Semiconductors
- Sources of Power
- Practical Application of the Diode
- Full Wave Rectifiers
- Bipolar Junction Transistors
- Specialized Diodes
- Field-Effect Transistors
- Power Supplies - Part 1
- Power Supplies - Part 2
- Introduction to Logical Systems
- The Logical OR Function
- The Logical AND and NOT Functions
- The NOR and NAND Functions
- Binary Numbers and Codes

Advanced Electronics

Advanced Electronics course introduces you to another way of demonstrating the logical functions you studied: logical gates. In this course, you will explore logical gates and digital systems.

Course Outline

- Integrated Circuits
- Logic Gates
- More Logic Gates
- Boolean Algebra
- Binary Arithmetic
- Flip-Flops
- Types of Flip-Flops
- Shift Registers
- Counters
- Digital to Analog Conversion
- Analog-to-Digital Conversion
- Data Acquisition
- Sensors
- Displays
- Circuit Analysis

Ordering Information

Hardware

SensorLine training panel for Sensor Technology	00-3014-0000

Curriculum

Electrical Systems, LearnMate course, Lab & Virtual	77-8046-0000
Fundamentals of Electronics, LearnMate course, Virtual	77-3019-0000
Advanced Electronics, LearnMate course, Virtual	77-3020-0000
Sensor Technology, LearnMate course, Lab & Virtual	77-8012-0000

Bundles

Electrical Systems lab includes curriculum and hardware	
Sensor Technology lab includes curriculum and hardware	JM-SNSR-PANEL

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