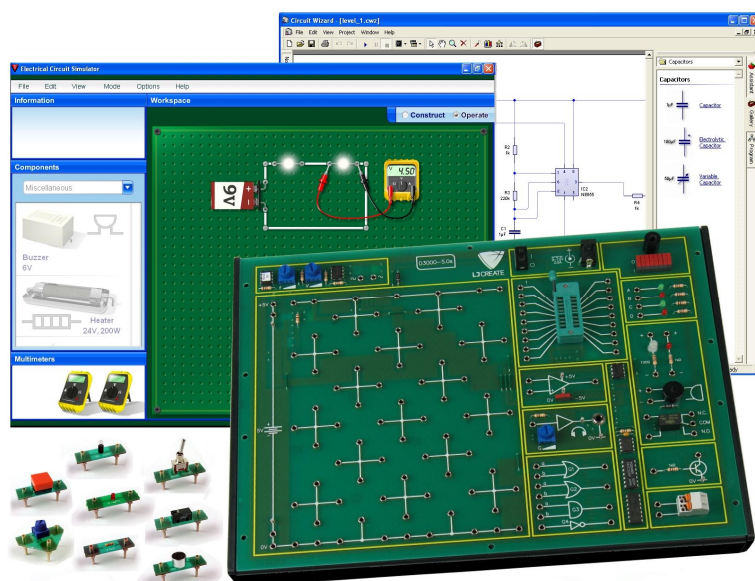




Electronic Circuits



This is one of a series of instructional curriculum units designed specifically to operate within a lockstep environment where all students carry out assignments simultaneously within the same topic area.

This unit provides all hardware required, together with 15 assignments of on-screen curriculum materials in an HTML format. These can be delivered via a LAN using our ClassAct classroom management system, or the Internet using our ClassCampus management system or a SCORM compliant VLE.

The curriculum includes continuous assessment, assessment tests and a workbook journal to create a portfolio of work during the lessons. Typical activities include hands-on investigations, problem-solving, and projects.

Each assignment contains approximately two hours of study. An assignment typically begins with a PowerPoint presentation that provides students with background information required to complete the rest of the lesson. If used with our ClassAct SRS system, questions integrated into the PowerPoint can be tracked as each student responds on their handheld keypad.

Demonstration activities are carried out by the instructor using purpose built hardware. Students carry out hands-on activities using a software simulation of the hardware. The students also have an opportunity to verify their solutions using the hardware.

Using component project kits, students individually prototype circuits. Where appropriate, research activities are also incorporated.

This instructional unit uses a software simulation of electronic circuits and an Electronic Circuits trainer for construction of circuits on a patching board using components mounted on carriers. The unit also includes projects for students to use real components to construct and test circuits on prototyping boards that include breadboard, pre-made PCB and stripboard.

The unit focus is on practical skills and will allow the student to undertake the identification and selection of a variety of electronic components, as well as assembly and testing of electronic circuits. Using test instruments the student will check components and simple circuits and locate faults. Typical components include:

- Resistors and capacitors
- Diodes and transistors
- Switches and relays
- Buzzer, lamps and LEDs
- Phototransistor and tilt switch
- Op-amp and 555 timer
- Logic gates
- PIC microcontrollers

Topic areas include:

- Component identification
- Circuit construction using carrier-mounted components on the Electronic Circuits trainer
- DC and AC signals
- Analogue and digital systems
- Circuit construction on a range of prototyping systems including breadboard, PCB and stripboard
- Sub-system function, component function and circuit operation
- Reading component symbols and interpreting circuit diagrams
- Use of test equipment
- Circuit testing and fault finding

Activities include:

- Describe the function of components in an automatic light circuit.
- Calculate voltages of a potential divider.
- Identify a resistor and read colour code values.
- Observe the relationship between capacitor value and charge/discharge time.
- Identify semiconductor components, including a diode, transistor and ICs.
- Use a circuit simulation to construct, operate and measure voltages in a temperature warning circuit.
- Construct a 555 timer circuit on the Electronic Circuits trainer as part of a flashing doorbell.
- Assemble and solder components on a PCB to form a continuity tester.
- Assemble and solder components on stripboard to form an anti-theft device.
- Use test equipment to fault-find an amplifier.
- Assemble on breadboard an operational amplifier IC and components to form a temperature warning circuit.

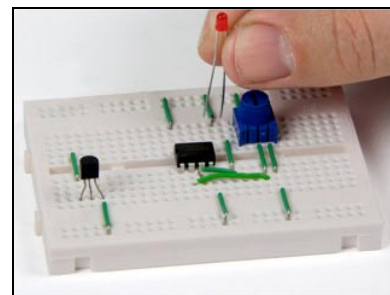
Performance objectives are included for our ClassAct or ClassCampus management systems to generate a comprehensive portfolio of student reports.

Items supplied with ST450 ETP include:

- Electronic Circuits trainer and power supply
- Carrier-mounted components
- Multimeter and headphones
- Set of circuit links and connecting leads
- Storage tray for the above items
- 12 packs of breadboards and reusable components in storage tray
- Consumable pack for 24 students in storage tray (contains PCB, stripboard, components)
- Circuit Simulation Package (15-user license)
- Curriculum CD containing:
on-screen student learning material
on-screen instructor resources
Instructor Guide (printable)

Additional items required:

- One computer per workstation (some research activities also require Internet access)
- Soldering workstation equipment
- Oscilloscope and logic probe test equipment



Order as: ST450 ETP

Please call LJ Create for more options.

	No.	Average time
Assignments	15	136 mins
Total		34 hours