CTE Frameworks - Electronics Engineering Technology Equipment List

## Recommended Equipment

### Safety Equipment

* Safety Glasses or Goggles
* Insulated Gloves
* Lab Coats or Aprons
* Antistatic Wrist Straps and Mats
* Fire Extinguishers: Specifically rated for electrical fires (Class C)
* Fire Blankets
* First Aid Kits
* Voltage Warning Signs
* Other Safety Signage and Emergency Procedure Posters
* Safety Data Sheets (SDS)
* Insulated Tools: Such as screwdrivers and pliers
* Emergency Shutoff Switches
* Ground Fault Circuit Interrupters (GFCIs)
* Circuit Breakers
* Eye Wash Stations
* Fume Extractors

### Classroom Technology

* Desktop or Laptop Computers: Equipped with sufficient processing power for running circuit simulation and design software.
* Circuit Simulation Software: Programs like Multisim, LTSpice, Proteus, or Tinkercad for designing and simulating electronic circuits
* PCB Design Software: Tools such as KiCad, Eagle, or Altium Designer
* Microcontroller Programming Environments: IDEs like Arduino IDE, MPLAB X, or MicroPython
* Virtual Oscilloscopes and Function Generators
* Digital Storage Solutions
* Interactive Whiteboard or Smartboard
* Projector
* Document Camera
* 3D Printer

### Laboratory Equipment

* Breadboards, Prototyping boards
* Oscilloscopes
* Multimeters
* LCR Meter
* Function/Signal Generators: To produce a variety of electronic signals (e.g., sine, square, and triangle waves).
* Spectrum Analyzer
* Component Tester
* ESR Meter
* Network Analyzer
* Electrostatic Discharge (ESD) Testing Tools
* Cable and Wire Tester
* Infrared Thermal Camera
* Data Logger
* Current Probe
* Cable Tracer
* Digital Storage Oscilloscope (DSO)
* Time-Domain Reflectometer (TDR)
* DC Power Supplies
* Digital Logic Analyzers
* Component Kits: Including resistors, capacitors, inductors, diodes, transistors, LEDs, switches, and integrated circuits (ICs).

### Modern Electronics and Microcontrollers

* Arduino or Similar Microcontroller Kits
* Raspberry Pi or Similar Single-Board Computers
* IoT Development Kits and Smart Devices

**Hand Tools**

* Wire Cutters
* Wire Strippers
* Precision Flush Cutters
* Needle-Nose Pliers
* Bent-Nose Pliers
* Combination Pliers
* Precision Screwdrivers
* Insulated Screwdrivers
* ESD-Safe Tweezers
* Curved Tweezers
* Soldering Iron
* Desoldering Pump (Solder Sucker)
* Soldering Iron Stand
* Solder Wick (Desoldering Braid
* Digital Multimeter
* LCR Meter
* Calipers
* Clamps and Holders, Helping Hands (Third-Hand Tool)
* PCB Holder or Vise
* Marking Tools, Permanent Markers, PCB Etching Pen
* Heat Gun
* Hot Air Rework Station
* Isopropyl Alcohol and Brushes
* Antistatic Brushes
* Power Meters
* Jumper Wires
* Heat Shrink Tubing and Electrical Tape
* Storage Cabinets and Organizers