CTE Frameworks - Telecommunications and Fiber Optics Equipment List

## Recommended Equipment

### Safety Equipment

* Safety Glasses or Goggles
* Insulated Gloves
* Face Masks
* 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

* Computers equipped with network design, simulation, and analysis software.
* Networking Hardware (Routers, Switches, Access Points)
* Telecommunication and Fiber Optic Training Kits
* Project Management Software
* Document Scanners
* Online Collaboration Tools, e.g., Platforms like Microsoft Teams or Slack
* 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

### Testing Equipment

* Optical Time-Domain Reflectometer (OTDR)
* Time-Domain Reflectometer (TDR)
* Component Tester
* Fusion Splicer
* Smart Cable Tester
* Cable Toner and Probe Kits
* Signal Generators and Spectrum Analyzers
* Network Analyzers
* VOM Meters (Volt-Ohm-Milliammeter)
* ESR Meter
* Digital Multimeters
* LCR Meter
* Cable Certifiers/Analyzers
* Fiber Optic Inspection Microscope
* Function/Signal Generators
* Spectrum Analyzer
* Electrostatic Discharge (ESD) Testing Tools
* Infrared Thermal Camera
* Data Logger
* 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).

### Power Tools

* Automatic Fiber Optic Connector Cleaner
* Wireless Labeling Machine
* Handheld Wi-Fi Analyzer
* Cordless Drills and bits
* Impact Driver
* Dremel
* Rotary Tools
* Electric Cable Cutters
* Heat Guns
* Reciprocating Saw
* Circular Saw
* Electric Punch Down Tools
* Fiber Optic Cleavers
* Power Strippers
* Vacuum or Blower
* Hammer Drills

### Hand Tools

* Fish Tapes
* Gopher Poles
* Fiber Optic Cleaving Tools
* Compression tools
* Wire Cutters
* Wire Strippers
* Cable Strippers
* Precision Flush Cutters
* Needle-Nose Pliers
* Bent-Nose Pliers
* Combination Pliers
* Precision Screwdrivers
* Magnetic Screwdrivers
* Insulated Screwdrivers
* ESD-Safe Tweezers
* Curved Tweezers
* Crimping tools
* Scissors and Utility Knives
* Soldering Iron
* Desoldering Pump (Solder Sucker)
* Soldering Iron Stand
* Solder Wick (Desoldering Braid
* Calipers
* Clamps and Holders, Helping Hands (Third Hand Tool)
* PCB Holder or Vise
* Cable Marking Tools, Permanent Markers, PCB Etching Pen
* Cleaning Kits (Swabs, Alcohol, Lint-Free Cloths)
* Antistatic Brushes
* Jumper Wires
* Heat Shrink Tubing and Electrical Tape
* Storage Cabinets and Cable Organizers

### Installation Equipment

* Cable Pulling Tools
* Ladders and Scaffolding
* Splice Closures
* Cable Trays and Conduits
* Patch Panels and Racks