

Electrical Construction and Maintenance Tool List:

NOTE: *Highlighted* items are part of the student discounted Klein tool kit which is recommended but not required. Items not highlighted must be purchased separately from this kit if you choose to pursue it. Regardless of where tools are purchased, all items on this list are required unless identified as optional.

REQUIRED TOOLS:

- PC based laptop & mouse (Macs are not permitted as they do not work with AutoCAD correctly)
 - Must be able to run the most current version of AutoCAD. Please see the Autodesk website to ensure minimum system requirements are met (<https://www.autodesk.com/>)
- Tool storage – Tool box, tote or pouch (e.g. Klein 554158-14)
 - Lockers provide area = 23" deep x 13" high x 12" wide
 - **NOTE:** Packout style tool boxes not permitted due to storage concerns
- Professional grade, clamp meter. Must be able to test for current, voltage, resistance, continuity and capacitance. (e.g. Klein CL320 or Fluke 324)
- Plug in receptacle tester with GFCI test function (e.g. Klein RT210)
- 16" Hacksaw (uses 12" blades) (e.g. Klein-702-12)
- 12" hacksaw blades – 32 tooth hacksaw blades of professional quality (e.g. Klein 1232BI-P)
- Screw and Nut Drivers :

Recommended:

- Three (3) slotted-head screwdrivers:
 - 1/8" (e.g. Klein 6254)
 - 3/16" (e.g. Klein 6013K)
 - 1/4" (e.g. Klein 6024K)
- Two (2) Phillips head screwdrivers:
 - #2 tip (e.g. Klein 662)
 - #1 tip (e.g. Klein 668)
- #2 square drive (e.g. Klein 666)
- Nut driver set (e.g. Klein 647)

OR

*****The 11 in 1 tool and 1/8" screwdriver below can be substituted for the above list of screw and nut drivers but will serve a student better as an addition to the list of recommended screwdrivers and nut driver set.**

- 11 in 1 Tool (e.g. Klein 32500MAG)
- 1/8" slotted screwdriver (at least 2-3" shank) (e.g. Klein 6254)
- Professional grade screw holding screw driver (e.g. Klein 85155K)
- 9" side-cutting pliers (i.e. lineman's pliers) (e.g. J213-9NE)

- Professional grade arc-joint or pump pliers (10") (e.g. Klein J502-10)
- 8" Adjustable crescent wrench (e.g. Klein 05078)
- Diagonal-cutting pliers (6" or 7") (e.g. Klein J228-8)
- Needle-nose pliers (6" or 8") (e.g. Klein J203-8)
- 16 oz. straight claw hammer (e.g. Klein H80816)
- Scratch awl (e.g. Klein 650)
- 9" magnetic torpedo level (e.g. Klein 935)
- Wire Stripping Tool (e.g. Klein 11045 or Ideal 45120)
- Combination tool: Crimping tool, bolt cutter (e.g. Klein 1010)
 - Professional grade required and must strip wire from front of tool
- Tape measure (12' minimum) (e.g. Klein 9525)
- Utility Knife with retractable blade (e.g. Klein 44301)
- Allen key sets (e.g. Klein 70550 *and* 70540)
- Conduit reaming tool (e.g. Klein 85191 or Ideal 35-083)
- Thread tapping tool (e.g. Klein 627-20 or ideal 35-922)
- Book of wire numbers (e.g. Klein #56250 or Ideal 44-109)

OPTIONAL TOOLS (Strongly Recommended):

- Battery operated drill driver/impact driver with driver bit set (e.g. torx, phillips, square, etc.)
- Set of quality drill bits up to half inch
- Center Punch
- 18T and 24T hacksaw blades
- Jack Knife with 2 3/4" Blade
- 12 and 14 AWG Romex Strippers (e.g. Klein K1412)
- Professional grade step drill (e.g. Greenlee 36414 or Klein QRST11)

REQUIRED (AVAILABLE AT CAMPUS BOOKSTORE):

- One pair of OSHA approved, clear lensed safety glasses. If the student wears prescription glasses they must be approved safety lenses, use stick on lenses or fit over prescription safety glasses. (e.g. Klein 60159)
- Two key or combination padlocks to secure tools
- 12" architectural ruler (not engineering)
- Timely #61 circuit aid (drawing template)
- Hard hat, removable chin strap recommended (required on outside projects) (e.g. Klein 60564)
- Ugly's Electrical References – Current Edition

REQUIRED MATERIAL:

- Lockable type storage container or tote for required materials in this list (*size should be roughly 12W x 12H x 16L*)
- Small wire ties (zip ties) – minimum 100 count
- Fine tip permanent markers (Sharpie)
- Pencil (#2, at least 4)
- Electrical Tape

- (1) roll – Black electrical tape
- (1) roll – White electrical tape
- Wire nuts:
 - Box of small blue or orange
 - Box of red
 - Box of yellow or tan
- Screws:
 - #10 x 3/4" sheet-metal type screws for wood (hex heads with appropriate driver bit encouraged, pan heads acceptable)
 - 6-32 pan head machine screw kit (range in size from roughly 1/2" to 2 1/2" +/-)
 - 8-32 pan head machine screw kit (range in size from roughly 1/2" to 2 1/2" +/-)
 - 10-32 green equipment ground screws
- Hardwired, low voltage doorbell chime kit (must include chime, transformer and at least one pushbutton – two buttons preferred) (e.g. Heath Zenith #18000074 or similar)
- 120volt to 24volt transformer (rated +/- 50VA) – hardwired, box mounted using 1/2" knock out (e.g. Functional Devices / RIB #TR50VA001 or similar)
- Six – 4" x 2 1/8" deep, square metal boxes. No internal clamps with 1/2" and 3/4" knock outs
- Six - 4" square mud rings – 1 device, raised 5/8" (e.g. RACO #8768 or equivalent)
- Six - 4" square mud rings – 2 device, raised 5/8" (e.g. RACO #8769 or equivalent)
- Four - 4" square mud rings – round fixture (e.g. RACO #8756 or equivalent)
- Devices (color doesn't matter)
 - Six – 125volt/15amp, 1 pole switch (e.g. Eaton #1301-7W-SP-LW or similar)
 - Six – 125volt/15amp, 3 way switch (e.g. Eaton #1303-7W-SP-LW or similar)
 - Two – 125volt/15amp, 4 way switch (e.g. Eaton #1242-7W-BX-LW or similar)
 - Ten – 125volt/15amp duplex receptacles (e.g. Eaton #270W-10-LW or similar)
 - One – 125volt15amp GFCI receptacle (e.g. Eaton #GF15W-BX-LW or similar)
 - Four – Keyless light fixtures (plastic or porcelain is acceptable) (e.g. Eaton #S1174W-SP-L or similar)
- Minimum 25 – 1/2 EMT connectors, setscrew type
- Minimum 25 – 1/2" NM connectors, locknut type (metallic)