

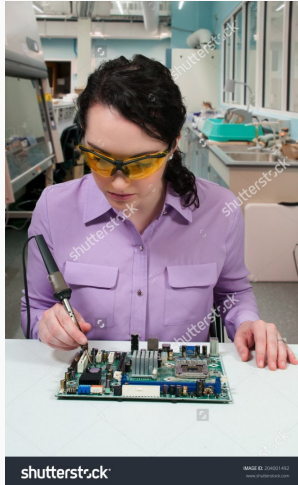
# E4E Soldering Workshop

---

December 4, 2023

Engineers for Exploration, UC San Diego

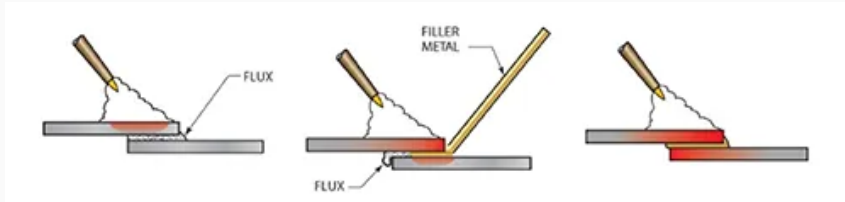
# Obligatory Meme



# Applicable Standards

- IPC J-STD-001
- NASA Workmanship Standards
- E4E Soldering Standards (Not yet published)

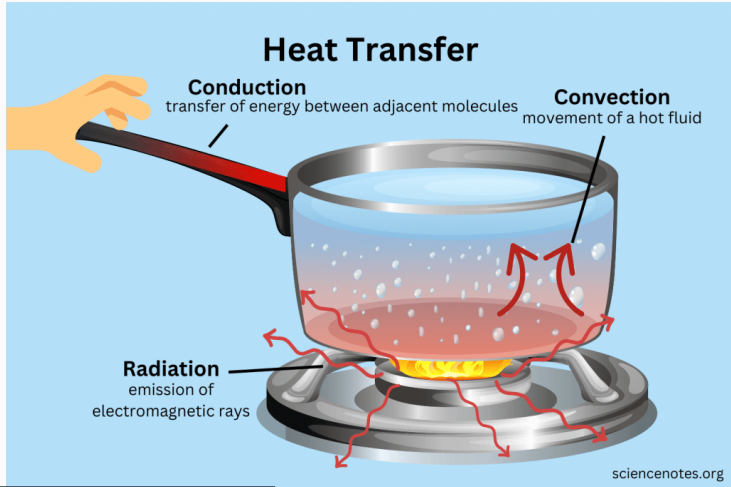
# What is soldering?



1

<sup>1</sup><https://www.uti.edu/blog/welding/brazing-soldering-welding>

# Review of Thermodynamics



<sup>2</sup><https://sciencenotes.org/heat-transfer-conduction-convection-radiation/>

# Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

# Types of Soldering

- Wire to Wire (low and high power)
- Wire/Through Hole to Connector/Board (low power)
- Wire to Board (high power)
- Surface Mount (exposed lead, no lead)
- Wire to Device (low power)
- Rework/Desoldering Through Hole
- Rework/Desoldering Surface Mount

# Initial Training Scope

- Wire to Wire (low power)
- Wire/Through Hole to Connector/Board (low power)
- Wire to Device (leaded coarse pitch)



## Exercise #1

Build a 22 AWG wire ring 1" in diameter

# Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

## Exercise #2

Solder D1, D2 on EK1950

# Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat

## Exercise #3

Solder leads to JP1 on EK1950

# Fundamentals of Soldering

1. Clean
2. Tin
3. Heat
4. Flow
5. Repeat