

WhatWeNeedToKnow (From The BOTTOM of the list to the TOP)

INTERNET

Internet architecture

- INTERNET OF THINGS
- INDUSTRIAL AUTOMATION AND CONTROLS

COMPUTERS

- Internal parts
- Architecture / structure
- PCs
- Operating Systems (Windows / MAC)

MICRO-COMPUTERS: *PHYSICAL COMPUTING*

ARDUINO

ESP32

SOFTWARE

- Coding: Languages
 - C / C++
 - Python
- Libraries

ELECTRONICS

- MECHATRONICS
- ROBOTICS

Electronics Components

Passive Components

- Resistors
- Capacitors
- Inductors
- connectors

Active Components

- diodes
- transistors
- TRIACs

Digital Electronics

- IC (integrated circuit) Logic Chips
- Modules
- Large Scale Integrated circuits

Analog Electronics

- Analog Integrated Circuits: Operational Amplifiers
- Analog Chips
- Modules

Measurement Tools: Electrical Measurements

- Multimeters: Voltage, Current, Resistance, Temperature, frequency
- Fixed Meters
- Oscilloscopes
- Signal Generators

ELECTRICAL POWER

- Electrical Math Computations
- Electrical UNITS: Voltage, Resistance, Current
- Lighting Devices
- Transformers: Magnetism, Turns Ratio
- Mains Power (Egypt: 220V AC 50Hz)
 - Egyptian Power Systems 3 phase, high > 100000V , medium: > 10000V , Low: <1000V
 - Egypt Building wiring
- Electric Motors, Electric heaters
- Power Supplies: run low voltage devices
 - Example 220VAC to variable DC Power Supply
 - Example: PC Power Supply (ATX, other) Multi-Voltage
- Switches: Poles, Throws SPST SPDT DPDT etc.
- Batteries: One-use, Rechargeable, different type/chemistry