

Readiness report — Introduction to Microcontrollers (Lake Washington Tech OER)

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Readiness: Introduction to Microcontrollers (Lake Washington Tech OER)

Verdict: Ready with caveats · 2026-07-19 · est. parts cost \$95-\$110

The hardware for this lab is almost entirely sourceable, though the target microcontroller requires sourcing from secondary distributors or shifting to the Industrial-grade variant due to stock shortages at primary distributors. A critical software caveat exists: the lab instructions rely on the deprecated MPASM assembler, which is absent from modern MPLAB X versions (v6.00+). Instructors must use legacy toolchains (v5.35 or earlier) to maintain compatibility with the provided source code. This is a baseline check.

Action required

Part	Problem	Recommended action
PIC16F18875-E/P	Out of stock at DigiKey (20-week lead).	Purchase from Mouser or use Industrial-grade substitute PIC16F18875-I/P.
Glass Break Detector	Identity unverified; commercial units are proprietary and expensive (\$30+).	Use suggested Sound Microphone Sensor Module substitute (\$5.72).

Parts

Primary Development Hardware

Part	Spec/Package	Status	Stock	Price	Source
DM164136	Curiosity HPC Board	Active	201	\$33.99	DigiKey

Core Integrated Circuits

Part	Spec/Package	Status	Stock	Price	Source
PIC16F18875-E/P	8-bit MCU / PDIP-40	Active	549	\$2.46	Mouser
MCP9701-E/TO	Temp Sensor / TO-92	Active	3,526	\$0.53	DigiKey

Security System Peripherals (Lab #9)

Part	Spec/Package	Status	Stock	Price	Source
Magnetic Reed Switches	Contact Switch Module	Active	>10	\$4.75	DigiKey
PIR Motion Sensors	HC-SR501 Module	Active	>10	\$3.95	PiShop USA
Glass Break Detectors	Acoustic Sensor	Plausible	—	—	—
Numerical Keypad	3x4 Matrix Membrane	Active	>10	\$2.95	PiShop USA
Character LCD Display	16x2 I2C Module	Active	>10	\$11.90	DigiKey
Piezo Buzzer / Siren	5V Active	Active	>10	\$0.99	PiShop USA
External Siren Relay	5V Relay Module	Active	>10	\$6.37	DigiKey

General Prototyping Components

Part	Spec/Package	Status	Stock	Price	Source
Indicator LEDs	5mm Assortment	Active	>100	\$8.49	Walmart
Resistors (Axial)	1/4W Kit	Active	>10	\$9.95	Mouser
Tactile Pushbuttons	6mm TH (20-pack)	Active	>10	\$2.50	DigiKey
Breadboard and Jumpers	830-pt Kit	Active	>10	\$9.99	DigiKey

Substitutes

For part	Substitute	Differences	Verified	Judgment
PIC16F18875-E/P	PIC16F18875-I/P	Lower temp range (-40°C to 85°C vs -40°C to 125°C). Same PDIP-40 footprint and voltage.	package + lead spacing	Acceptable drop-in for lab use.
Glass Break Detector	Sound Microphone Module	Detects sound volume/envelope instead of specific glass frequency; provides logic level output.	not stated	Plausible; requires code validation for sound trigger levels.

Instructors must verify any substitute against its datasheet before ordering.

Other dependencies

- **MPLAB X IDE:** v5.35 or earlier is required to use the native MPASM assembler for provided `.asm` files.
- **Assembler Syntax:** Standard `.asm` files (MPASM) are incompatible with the modern `pic-as` assembler without significant rewriting.

- **OER Hosting:** Verified; the OpenWA Pressbooks URL is active as of 2026-07-19.
- **Firmware/Libraries:** Not checked.

Watch list

- **PIC16F18875-E/P:** Stock is currently zero at DigiKey with long lead times; Mouser stock is healthy but should be monitored.
- **MPASM Status:** Future operating system updates may eventually break the functionality of legacy MPLAB X v5.35, creating a hard stop for the lab's current code base.