

Readiness report — OP-TEC Photonics Lab Manual for High Schools

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Readiness: OP-TEC Photonics Lab Manual for High Schools

Verdict: Ready with caveats · 2026-07-19 · est. parts cost >\$3,200

The lab is fully implementable, but the baseline kit cost for a single station has risen significantly from the legacy \$2,500 estimate to over \$3,200. This increase is driven by the high cost of precision optomechanics and the discontinuation of the primary low-cost photometer. This is a cold check establishing the baseline for the current curriculum state.

Action required

Part	Problem	Recommended action
Thorlabs LDS5	Discontinued May 2, 2024	Use DS5 power supply with CPSA adapter cable.
Industrial Fiber Optics IF PM	Obsolete as of August 20, 2024	Transition to Thorlabs PM16-121 (requires laptop/PC).
Thorlabs VC3	Hard to obtain / Discontinued	Purchase updated SKU VC3C.
Industrial Fiber Optics IF FS1	Zero stock at major distributors	Order direct from manufacturer.

Parts

Active Electronics and Light Sources

Part	Spec/Package	Status	Stock	Price	Source
Thorlabs CPS635R	635 nm, 1.2 mW, Ø11 mm	Active	Good	\$113.00	Thorlabs
Thorlabs LDS5	5 VDC, 2.5 mm phono	Discontinued	0	—	—
Industrial Fiber Optics IF PM	Handheld Photometer	Obsolete	0	\$248.86	Manufacturer
Coast G19 LED	White LED Penlight	Active	Good	\$13.99	Sports Basement

Optical Components (Lenses, Prisms, and Mirrors)

Part	Spec/Package	Status	Stock	Price	Source
Thorlabs LC1258	f = -75.0 mm, Ø25 mm	Active	Good	\$42.00	Thorlabs

Part	Spec/Package	Status	Stock	Price	Source
Thorlabs LB1761	f = 25.4 mm, Ø1 inch	Active	Good	\$63.00	Thorlabs
Thorlabs LE1202	f = 200 mm, Ø1 inch	Active	Good	\$55.00	Thorlabs
Thorlabs LC1259	f = -50.0 mm, Ø25 mm	Active	Good	\$42.00	Thorlabs
Arbor Scientific 33-0220	25 mm x 75 mm Equilateral	Active	Good	\$8.25	Arbor Scientific
Arbor Scientific 33-0225	32 mm x 50 mm Right Angle	Active	Good	\$9.95	Arbor Scientific
Edmund Optics 27-453	25.4 x 51 x 6 mm Mirror	Updated SKU	Good	\$55.00	Edmund (#48-453)
BME Lab & Science RCB	75 x 50 x 15 mm Acrylic	Drop-in avail	Good	\$8.02	MegaDepot

Filters and Gratings

Part	Spec/Package	Status	Stock	Price	Source
Edmund Optics 01-307	1000 lines/mm film	Active	Good	\$28.50	Edmund Optics
Industrial Fiber Optics IF FS1	RGB Filter Set	At Risk	0 (Dist)	\$11.07	Manufacturer
Edmund Optics 73-961	Ø23 mm Glass Polarizer	Updated SKU	Good	\$25.00	Edmund Optics
Arbor Scientific P2-9405	Slide-Mounted Polarizer	Active	Good	\$42.00	Arbor Scientific
Thorlabs WPMQ05M-633	Ø12.7 mm, 633 nm	Active	Good	\$380.00	Thorlabs
Thorlabs S100R	50 x 50 mm Slide	Active	Good	\$85.00	Thorlabs

Mechanical Hardware and Mounting

Part	Spec/Package	Status	Stock	Price	Source
Thorlabs MB1218	12" x 18" Breadboard	Active	Good	\$227.00	Thorlabs
Thorlabs BA2	2" x 3" x 3/8" Base	Active	Good	\$8.67	MeetOptics
Edmund Optics 58-977	1.5" x 1.0" Post Holder	Active	Good	\$15.25	Edmund Optics
Edmund Optics 58-961	1.5" x 5" Post	Active	Good	\$12.00	Edmund Optics
Thorlabs VC3	2.5" V-Clamp	Discontinued	0	—	—
Thorlabs RP01	2.5" x 2.5" Rotation Stage	Active	Good	\$136.50	Ind. Automation
Thorlabs RSP1	Ø1" Rotation Mount	Active	Good	\$113.00	Thorlabs
Thorlabs PT1	Single Axis Trans. Stage	Active	Good	\$349.00	Thorlabs
Edmund Optics 33-501	25 x 25 mm Mirror Mount	Updated SKU	Good	\$136.00	Edmund (#17-242)
Thorlabs LMR1	25 mm Fixed Lens Mount	Active	Good	\$20.00	CBI Surplus

Part	Spec/Package	Status	Stock	Price	Source
Thorlabs DH1	Dual Filter Holder	Active	Good	\$10.00	CBI Surplus
Thorlabs RA90	Right Angle Post Clamp	Active	Good	\$21.00	Thorlabs
Thorlabs SH25S075	1/4"-20 x 3/4" Screws	Active	Good	\$10.04	Thorlabs (25pk)
Thorlabs SS25S075	1/4"-20 x 3/4" Setscrews	Active	Good	\$7.40	Thorlabs (25pk)

Lab Tools and Accessories

Part	Spec/Package	Status	Stock	Price	Source
Arbor Scientific P2-7061	Handheld Spectroscope	Active	Good	\$10.00	Arbor Scientific
Westcott 18" Ruler	Stainless Steel	Active	Good	\$3.56	Walmart
SAE Hex Key Set	Generic Standard	Active	Good	\$3.28	Walmart
Edmund Optics 62-534	Optical Cleaning Kit	Active	Good	\$116.00	Edmund Optics
Plano 23650	Tackle Box Storage	Active	Good	\$40.57	Walmart

Consumables

Part	Spec/Package	Status	Stock	Price	Source
White paper/Cards	8.5"x14", 3"x5"	Active	Good	—	Retail
Tapes	Masking/Double-sided	Active	Good	—	Retail
Razor blades	Single-edge (Stanley)	Active	Good	—	Retail
Microscope slides	Arbor Sci 07-251	Active	Good	—	Arbor Scientific
Silly Putty	Standard	Active	Good	—	Retail

Substitutes

For part	Substitute	Differences	Verified	Judgment
Thorlabs LDS5	Thorlabs DS5 + CPSA	Legacy phono plug replaced by USB supply and phono adapter cable.	electrical compatibility (5V regulated) and connector (2.5mm phono jack)	Recommended drop-in replacement.
IF PM	Thorlabs PM16-121	USB interface requires PC/laptop; significantly higher cost (\$490).	silicon sensor	Acceptable but adds facility dependencies and cost.
Thorlabs VC3	Thorlabs VC3C	Current generation mechanical clamp.	footprint and clamping range	Verified drop-in.

Instructors must verify any substitute against its datasheet before ordering.

Other dependencies

- **Facility Standards:** The companion Photonics Program Planning Guide for High Schools (HSPPPG) was not provided for review; local laser safety compliance is unverified.
- **Software:** None required; standard scientific calculator or spreadsheet for trigonometric functions is sufficient.
- **Wavelength Calibration:** Substitutes for photometers or lasers must be cross-calibrated at 635 nm to maintain data table validity.
- **External Links:** Historical review link "howstuffworks.com/laser.htm" is not checked and subject to link rot.

Watch list

- **Industrial Fiber Optics IF PM:** Manufacturer stock status is the final source for this obsolete unit; procurement should be immediate if a handheld unit is preferred over USB.
- **Industrial Fiber Optics IF FS1:** Zero distributor stock indicates this part may move to obsolete status soon.
- **Thorlabs PT1 Stage:** Significant price driver for the kit; second-hand markets (eBay/BMI Surplus) frequently stock these for 40-60% of retail if budget is critical.