

# Not Rocket Science: A JHU Lab Safety Case Study

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## CASE STUDY: ECE PHOTONICS TEACHING LAB 2015

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The JHU Department of Electrical and Computer Engineering set up a new student photonics teaching lab in 2015. The department originally thought blackout curtains on all room windows and laser safety goggles for all students were required.

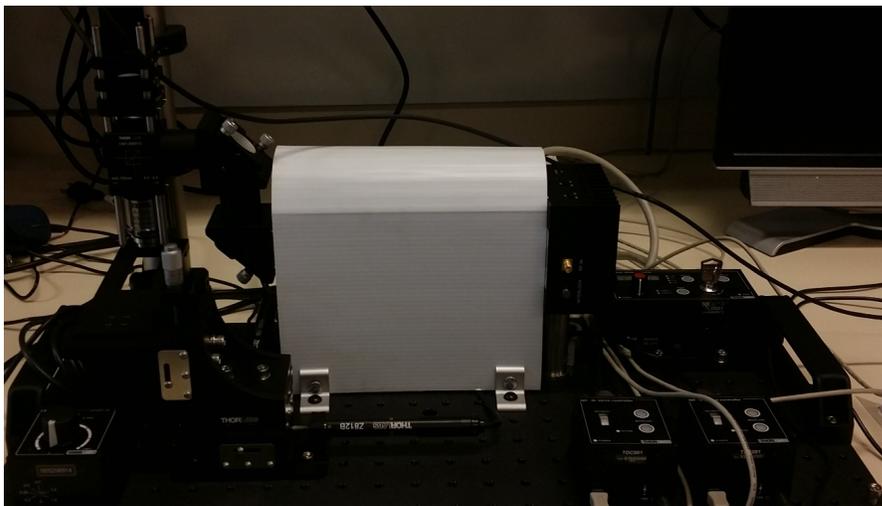
In reviewing five sets of equipment intended for the lab, the Laser Safety Advocate identified three embedded lasers in each set: two Class 2 lasers and one Class 3B laser. Using these lasers without shielding (an open beam-path), would make the Nominal Hazard Zone (NHZ-the area within which the laser is an eye hazard) encompass the entire room because of the Class 3B laser.

The Class 3B laser presented a hazard only during beam alignment, which is done only by the lab technician. Alignment takes several days and is not part of the educational objectives of the class. Nevertheless, it was possible for a student to place a reflective surface in the path of the laser and reflect the beam in any direction.

### SOLUTION:

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The Laser Safety Advocate designed a cover for the open portion of the laser optical path. This cover was screwed in place and difficult to remove without tools. With the cover on, the NHZ is limited to the interior of the covered area, as opposed to the entire room, and it is not possible to accidentally insert reflective objects into the beam-path. This removed the need for blackout curtains, laser safety goggles, and specific training for students to work inside the NHZ, saving both money and class time.



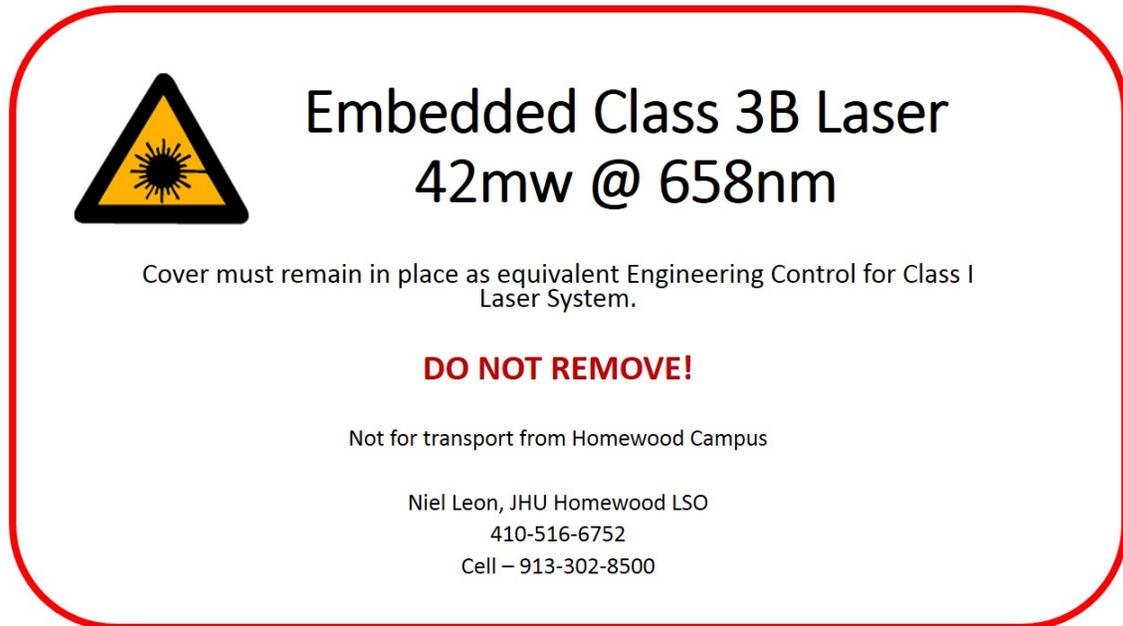
**Figure 1: Coroplast® Cover Over Open Optical Path**

Contact Dr. Dan Kuespert, Laboratory Safety Advocate, at 410-516-5525 or [dkuespert@jhu.edu](mailto:dkuespert@jhu.edu) for more information about this JHU Safety Note.

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The cover also included a suitable warning label:



As an additional administrative control, the experimental protocols (standard operating procedures, or SOPs) for the students warn not to remove the cover.

## COSTS / SAVINGS:

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Total cost of materials for the cover was less than \$25.00 for each of the 5 units in the lab.

The department saved significant budget funding by eliminating:

- 25-30 pairs of laser safety goggles at \$150 each – \$4500
- 1 Optical sterilization cabinet (for sanitizing goggles) – \$600
- 25' long x 10' high laser blackout curtain (estimated cost) – \$8,000

**Net savings for the project: approx. \$13,000.** The project also eliminated 2.5 hours of student training per student each semester, since the students do not need to be qualified to work inside the NHZ.

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