*Content Area Prerequisites Course Equivalents*

**Number** P390 **Credits** 1

**Course Title** Advanced Laboratory I

**Description** Up to four credits may be earned in Advanced Laboratory, one hour each semester. The course is generally taken during junior and senior years. Selected experiments from the following areas are included: mechanics, thermodynamics, radiation physics, optics, electronics, electricity and magnetism, and solid state physics. For each credit received the student selects a minimum of eight experiments spread over these areas. Typical experiments performed would be the Frank-Hertz Experiment, photoelectric effect, X-ray diffractions, thermoluminescent dosimetry, positron-electron annihilation, neutron activation analysis, thermionic emission, the hall effect, nuclear magnetic resource, Michelson interferometer, forced harmonic oscillator, air gyroscope, velocity of light, Rutherford scattering. Prerequisites: P304 and P314. Offered in alternative spring semesters or as needed for majors.

**Number Course Title Distance Credits School**

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| PHYS 460 | Undergraduate Research I | Traditional | 4 | Winona State University |
| PHYS 495 | Undergraduate Research | Traditional | 2 | University of Wisconsin River Falls |
|  | Advanced Laboratory I | Traditional | 2 | Winona State University |
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