

Photonics and Laser Technology

Associate of Applied Science Degree

Students completing the AAS in Photonics and Laser Technology will learn the scientific principles of optics, fiber-optics, and lasers. Technicians will be instructed on the processes and equipment incorporating these devices in electronic and electro-optics systems. This training will prepare students to become technicians who work on products or devices in manufacturing, communications, defense, homeland security, medical, information technology, energy, environmental monitoring, lighting, displays, and entertainment. This Associate of Applied Science in Photonics and Laser Technology (AAS PLT) will prepare students for entry level employment as a photonics or photonics-related technician.

This curriculum will first present a foundation of electronics curriculum core, which is critical to the success of the student in the photonics/laser technology portion of the program and in general in the photonics/electro-optic industry. A large portion of the electronics curriculum is hands on and students will spend a portion of their first year in an electronics lab. Photonics and optics will be introduced in the 2nd semester of course work. Along with gaining a strong electronics background, students will spend more than 40 percent of their time in the lab training on a variety of industrial lasers and optical systems to prepare the student for easy transition into the photonics work force.

Graduates are prepared to:

- Work as a technician in the optics, laser, and photonics support field. Students will have demonstrated knowledge in laser systems, electronics, optics and electro-optics. In particular, graduates will be prepared for a variety of careers in design and manufacturing, materials processing, communications, medical applications, semiconductor fabrication, optical systems, electronics, military applications, sales, and education.
- Demonstrate a foundation in electronics that includes electronic components and circuitry knowledge base.
- Function in a professional manner in their field, and use, maintain and clean equipment and tools required in the field of optics, lasers, and photonics.
- Analyze, configure, test, measure, troubleshoot and assist with problems that arise in a professional optics, lasers, and photonics, environment.
- Communicate technical ideas, procedures, and results with professionals in written, oral or graphic format.

Graduates will have knowledge of the following optics intensive components:

- Nature of light
- Optical Components
- Physics of Lasers and Laser Operation
- Materials Processing Systems
- Applied Mathematics
- Geometric optics
- Optical Devices and Principles of Operation
- Fibers and Fiber Optics
- Optical and Electro Optical Systems for Precision Measurements and Alignments
- Applied Physics
- Wave optics
- Optical Support and Positioning Equipment

- Optics of Imaging and Display
- Holography
- Applied Biology and Chemistry

Above program learning outcomes are derived with permission from OP-TEC's National Photonics Skill Standards for Technicians document.

Year 1	Credits	
	Fall	Spring
M 121Q - College Algebra (or M 111, M151Q or M 171Q)	3	
WRIT 101W - College Writing I	3	
COMX 222 - Professional Communication	3	
PHSX 103IN - The Physics of How Things Work	3	
EETC 101 - EETC 101: AC/DC Electronics with Lab	4	
M 151Q - Precalculus (or M 121Q or M 171Q)		3
DDSN 135 - SolidWorks I		3
EETC 106 - AC Circuit Analysis		3
EETC 113 - Circuits Lab		1
PLTT 101 - Fundamentals of Light and Lasers		5
Year Total:	16	15
Year 2	Credits	
	Fall	Spring
EETC 250 - Solid State Electronics I	4	
PLTT 201 - Laser Systems and Applications I	5	
TECHNICAL ELECTIVE - or BGEN 235 - Business Law or BMGT 235 - Management or BMKT 225 - Marketing or DDSN 235 - SolidWorks II or ITS 280 - Computer Repair Maintenance or ITS 164 - Networking Fundamentals or MCH 122 - Introduction to CAM or ANY EELE COURSE -	3	
MFTG 205 - Manufacturing Process		3
EETC 245 - Digital Electronics		4
PLTT 202 - Laser Systems and Applications II		5
PLTT 298 - Internship/Cooperative Education		2
TECHNICAL ELECTIVE - or BMGT 210 - Small Business Entrepreneurship or BMGT 215 - Human Resource Management or CAPP 156 - Microsoft Excel or ITS 110 - Introduction to Networking and Cabling or MART 145 - or WLDG 110/111 - Welding Theory I		3
Year Total:	12	17
Total Program Credits:		60