

**Microcredential in Optics (Physics)**  
**Three Courses (8 Credits)**  
**Faculty Steward (Physics Faculty, McGregor)**

*INOPTC 101 Introduction to Optics (4cr)*

*INOPTC 110 Laser Optics (2 cr)*

*INOPTC 120 Thin Films in Optics (2 cr)*

**Objectives/Rationale:** The optics and photonics industry is one of the fastest growing industries in the nation, New Hampshire and the Monadnock and surrounding regions, which are home to a great number of optics firms that are in need of entry-level optical engineers. This group of courses were formulated in consultation with these companies and provides the student with the knowledge and hands-on experience for gainful employment in this industry. Optics and photonics includes the research and development in areas of communications (fiber optics, telecom systems, cell phones, displays), medicine (diagnostics, therapies, gene modification, drug development), remote sensing (satellite and astronomical imaging, security systems, cameras), manufacturing (process control, laser machining, semiconductor fabrication), security and defense (guidance & control, displays) and basic research (university faculty, industrial & government scientist).

The microcredential includes a 4-credit Introduction to Optics course that supplies a broad foundation in all aspects of optics through hands on activities and exploring real world industry problems. A 2-credit course in Laser Optics will give students the fundamental knowledge in light/matter interactions and includes a laboratory component for hands-on experience in laser handling and safety as well as optical component handling and cleaning. A last course in Thin Films in Optics (2-credits) introduces the concept of thin film interference found in nature and the production, design & analysis of thin film optical filters currently being used in industry.

**Outcomes:** #1: Students will demonstrate an understanding of how optics plays a role in our lives and isn't limited to just the light we can see. Students will describe how cameras, light and different wavelengths are used in industry to solve everyday problems.

#2: Students will solve problems in, handle and safely work with laser optical systems

#3: Students will demonstrate an understanding of how thin films are manufactured and used as optical interference filters.