

Course Announcement for Winter 2010

ADVANCED LASERS AND PHOTONICS

**EECS 438 - ADVANCED LASERS AND PHOTONICS LABORATORY WITH MAJOR DESIGN
EXPERIENCE – Winter 2010**

Advanced undergraduate course in lasers and photonics with emphasis on laboratory exploration and team-based creative problem solution. Main objective of the course is to provide with hands-on experience and understanding of the main concepts in optics and photonics. This includes geometrical optics and modern optical design, diffraction phenomena and optical holography, optical coherence and interference and their use for optical coherence tomography imaging, lasers, ultrashort-pulse lasers and nonlinear optics. Second part of the course is a major design experience, in which students are working collaboratively within engineering teams to creatively solve various open-ended problems. Past problems solved by all-student teams included developing a wavelength-tunable fiber laser, demonstrating holographic image recording, building a mode-locked ultrashort-pulse laser and exploring its operation, designing optics for high-power laser beam delivery for space-elevator competition, etc.

Instructor: Professor A. Galvanauskas, EECS Department, almantas@umich.edu

This course is suitable for undergraduate and graduate students in electrical engineering, applied physics, biomedical engineering, material science and mechanical engineering.