

<b>COURSE:</b> EECS 438. <b>TITLE:</b> Advanced Lasers and Optics Laboratory. <b>PREREQUISITES:</b> EECS 334 or 434 or Graduate		<b>ELECTIVE.</b>
<b>TEXTBOOK:</b> E. Hecht, <i>Optics</i> , 4 <sup>th</sup> ed., Addison-Wesley		
<b>CATALOG DESCRIPTION:</b> Construction and design of lasers; gaussian beams; nonlinear optics; fiber optics; detectors; dispersion; Fourier optics; spectroscopy. Project requires the design and set-up of a practical optical system.		
<b>COURSE OBJECTIVES:</b> 1. To teach students how to use state-of-the-art equipment and optical laboratory techniques; 2. To teach students how to work on a large project in teams: breaking it down, organization;		<b>TOPICS COVERED:</b> 1. Laser and laboratory safety 2. Gaussian beams, polarization, fiber optics 3. Interferometry and spectroscopy 4. Laser design and modeling and detection 5. Autocorrelation and dispersion 6. Nonlinear optics; design project
<b>COURSE OUTCOMES [Program Outcomes Addressed]</b> 1. Ability to design and model laser resonators; and multi-element optical systems; [1,2,3,5,11] 2. Ability to design optical components for focusing, imaging, and spatial filtering; [1,2,3,5,11] 3. Ability to design and use optical diagnostic tools (spectrometers & autocorrelators); [1,2,11] 4. Ability to use optical coatings; and nonlinear optical methods for frequency conversion; [“] 5. Ability to work in teams, coordinate and organize, and present goals and results. [4,5,7]		<b>ASSESSMENT (Course outcomes)</b> 1. Laboratory written reports [1,2,3,4] 2. Project written and oral reports [1,2,3,4,5]
<b>PROGRAM OUTCOMES ADDRESSED:</b> 1,2,3,4,5,7,11	<b>CLASS/LAB SCHEDULE:</b>	
<b>PROFESSIONAL COMPONENT ADDRESSED:</b>	<b>LECTURE:</b> 2 per week @ 1 hour	
<b>PREPARED BY:</b> Andrew E. Yagle on Nov. 25, 2004	<b>LAB:</b> 1 per week @ 4-6 hours	

**COURSE DESCRIPTION: University of Michigan, College of Engineering, ELECTRICAL ENGINEERING PROGRAM**