

Course Content

Course Title (English)	Optoelectronic Electromagnetics
Course Title (Chinese)	光電電磁學
Credit	3
Instructor	Prof. Hung-Chun Chang 張宏鈞 教授
Outline	<ol style="list-style-type: none">1. OVERVIEW OF INTEGRATED OPTICS AND FIBER OPTICS2. MAXWELL'S EQUATIONS AND REFLECTION AND REFRACTION OF PLANE WAVES3. SCATTERING MATRIX FORMALISM AND ITS APPLICATION TO MIRROR AND INTERFEROMETER PROBLEMS4. THE PARAXIAL WAVE EQUATION AND HERMITE-GAUSSIANS5. OPTICAL WAVEGUIDES: DIELECTRIC GUIDING LAYERS AND OPTICAL FIBERS6. THE COUPLED-MODE THEORY (STATE-OF-THE-ART TREATMENT) AND ITS APPLICATION TO<ol style="list-style-type: none">(1) OPTICAL WAVE COUPLERS(2) DISTRIBUTED FEEDBACK STRUCTURES(3) ACOUSTO-OPTIC MODULATORS(4) SEMICONDUCTOR DIODE LASER ARRAYS7. WAVE PROPAGATION IN ANISOTROPIC MEDIA AND ELECTRO-OPTIC MODULATORS8. INTRODUCTION TO SOME NONLINEAR SYSTEMS.
Goal	THIS COURSE INTRODUCES MATHEMATICAL METHODS, PHYSICAL

	<p>CONCEPTS, AND DEVICE PRINCIPLES IN OPTICAL ELECTRONICS. EMPHASIS WILL BE PUT ON OPTICAL-WAVE AND ELECTROMAGNETIC FIELD PHENOMENA DERIVED FROM MAXWELL'S EQUATIONS. APPROXIMATE THEORIES SUITED FOR DESCRIBING WAVE PROPAGATION IN THE OPTICAL WAVELENGTH REGIME WILL BE DISCUSSED. RELATED DEVELOPMENT AND APPLICATIONS OF INTEGRATED OPTICS AND FIBER OPTICS WILL BE INTRODUCED.</p>
English Teaching	<input type="checkbox"/> YES <input checked="" type="checkbox"/> NO
Teaching Material	<input checked="" type="checkbox"/> English <input type="checkbox"/> Chinese