Department	Electrical and Computer Engineering
Course Number	**EE 484**
Course Title	Laser Engineering
Course Designation	Elective
University Catalog Description	Semesters offered: S, alternative years; Prerequisites: Physics 212 -- The laser engineering course provides a basic understanding of the design and operational principles of lasers. Discussions of design and operation of several types of lasers will be covered including solid state lasers, gas lasers, and semiconductor lasers.
Faculty Coordinator	Dr. Kevin Repasky
Prerequisite by Topic	Modern Optics, Electromagnetic Theory
Textbook	*Lasers*, Anthony E. Siegman, (University Science Books, Sausalito, California, 1986)
Course Objectives	To produce graduates who are able to understand the operation of lasers and optical amplifiers, and model and design laser systems.
Course Learning Outcomes	At the conclusion of EE 484, students are expected to : 1) Understand the operating principal of lasers and optical amplifiers 2) Model laser and optical amplifier systems 3) Design laser systems
Topics Covered	1) An Introduction To Lasers 2) Stimulated Transitions: The Classical Oscillator Model 3) Electric Dipole Transitions in Real Atoms 4) Atomic Rate Equations 5) Laser Pumping and Population Inversion 6) Laser Amplification 7) Linear Pulse Propagation 8) Laser Mirrors and Regenerative Feedback 9) Fundamentals of Laser Oscillation 10) Oscillation Dynamics and Oscillation Threshold
Class/Laboratory Schedule	EE 484 meets three times /week for 50 minutes plus a two-hour laboratory Session
Professional Component (Criterion 5)	This course strongly supports the application of science and engineering principals to the development of optical and laser systems. This course prepares students for either beginning an optics career or continuing studies in a graduate program.
ECE Program Outcomes	EE 206 supports following Program Outcomes: a. an ability to apply knowledge of mathematics, science and engineering c. an ability to design a system, component, or process to meet the desired needs
Total Credit Hours	3
Prepared by	Kevin Repasky 05/13/2009