

Course Information	
Course title	Topics in Machine Learning
Semester	102-2
Designated for	COLLEGE OF ELECTRICAL ENGINEERING AND COMPUTER SCIENCE GRADUATE INSTITUTE OF NETWORKING AND MULTIMEDIA
Instructor	CHIH-JEN LIN
Curriculum Number	CSIE7435
Curriculum Identity Number	922 U3940
Credits	3
Full/Half Yr.	Half
Required/ Elective	Elective
Time	Monday 34@
Remarks	The upper limit of the number of students: 50.
Table of Core Capabilities and Curriculum Planning	Association has not been established
Course Syllabus	
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Course Description	<p>OPTIMIZATION TECHNIQUES ARE USED IN ALL KINDS OF MACHINE LEARNING PROBLEMS BECAUSE IN GENERAL WE WOULD LIKE TO MINIMIZE THE TESTING ERROR. THIS COURSE WILL CONTAIN TWO PARTS. THE FIRST PART FOCUSES ON CONVEX OPTIMIZATION TECHNIQUES. WE DISCUSS METHODS FOR LEAST-SQUARES, LINEAR AND QUADRATIC PROGRAMS, SEMIDEFINITE PROGRAMMING, AND OTHERS.</p> <p>WE ALSO TOUCH THEORY BEHIND THESE METHODS (E.G., OPTIMALITY CONDITIONS AND</p>

	DUALITY THEORY). IN THE SECOND PART OF THIS COURSE WE WILL INVESTIGATE HOW OPTIMIZATION TECHNIQUES ARE APPLIED TO VARIOUS MACHINE LEARNING PROBLEMS (E.G., SVM, MAXIMUM ENTROPY, CONDITIONAL RANDOM FIELDS, SPARSE RECONSTRUCTION FOR SIGNAL PROCESSING APPLICATIONS). WE FURTHER DISCUSS THAT FOR DIFFERENT MACHINE LEARNING APPLICATIONS HOW TO CHOOSE RIGHT OPTIMIZATION METHODS.
Course Objective	
Course Requirement	
Office Hours	
References	CONVEX OPTIMIZATION
Designated reading	
Grading	