eCAL Recommended Courses for Research

The Energy, Controls, and Applications Lab (eCAL) conducts research than spans across conducts research at the intersection of controls, optimization, and artificial intelligence, with applications in batteries, electrified vehicles, energy and transportation systems. To conduct high-quality research, a fundamental training is absolutely required through coursework.

The following is a list of "eCAL recommended courses" for current & prospective eCAL graduate researchers. Please note that this does not represent a comprehensive curriculum or the official course requirements for an M.S. or Ph.D. degree. Your course schedule must comply with departmental requirements and the Berkeley Graduate Division Guide to Graduate Policy.

Core Class	
CE 295*	Energy Systems and Control
Control Group	
EE 221A -or- ME C232*	Linear Systems Theory -or- Advanced Control Systems I
EE 222 -or- ME 237	Nonlinear Systems -or- Control of Nonlinear Dynamics Systems
ME 231A	Experiential Advanced Control Design, aka Optimal Control
MATH 126	Intro to Partial Differential Equations
MATH 222A/B	Partial Differential Equations
Optimization Group	
EECS 127/227AT*	Optimization Models in Engineering
EE 227BT	Convex Optimization
CE C258/IEOR C253	Supply Chain and Logistics Management
CE 191	Civil and Environmental Engineering Systems Analysis
Machine Learning Group	
CS 189/289A*	Introduction to Machine Learning
CS 182/282	Designing, Visualizing and Understanding Deep Neural Networks
CS 285	Deep Reinforcement Learning, Decision Making, and Control
CE 291D	Data-driven Control Methods for Civil Engineering
Statistics and Data Analysis Group	
CE 193	Engineering Risk Analysis
CE 252	Systems Analysis in Transportation
STAT 215A	Applied Statistics and Machine Learning
Energy Engineering Seminar	
CE298-SEM 006	Group Studies, Seminars, or Group Research
ENGIN 93	Energy Engineering Seminar

Here, * indicates courses that are highly recommended by eCAL members.

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