eCAL Recommended Courses for Research



The Energy, Controls, and Applications Lab (eCAL) conducts research than spans across control systems,

optimization, batteries, energy storage, building energy, vehicle-grid integration, and smart grids. 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.

The following is an aggregate list of recommended courses, and does not represent a comprehensive curriculum nor course requirements for a M.S. or Ph.D. degree. Your course schedule must comply with departmental requirements and the Berkeley Graduate Division Guide to Graduate Policy.

CE 295 Energy Systems and Control EE 221A Linear Systems Theory -or- ME C232 -or- Advanced Control Systems I EE 222 -or- Nonlinear Systems- Anal, Stab., Ctrl -or- ME 237 Control of Nonlinear Dynamics Systems ME 231A Experiential Advanced Control Design, aka Model Predictive Control ME 233 Advanced Control Systems II (optimal, stochastic, & adaptive control) EE 223 Stochastic Estimation and Control ME 234 Multivariable Control Systems CE 2901 Control and Information Management CE 291F Control and Optimization of Distributed Parameter Systems MATH 126-or- Partial Differential Equations MATH 222A/B -or- Partial Differential Equations Optimization Group CE 191-or CEE Systems Analysis, aka Optimization EE 227RT Convex Optimization EE 227RT Convex Optimization EE 227RT Convex Optimization EE 228 Engineering Risk Analysis EE 126 Probability & Random Processes Or- EE 226 Engineering Risk Analysis EE 127 Scalable Spatial Analytics CE 2681 Civil Systems & Environment CE 271 Sensors & Signals CE 289 Design of Cyber Physical Systems CE 298 Embedded System Design Farm Landouction to Machine Learning CE 2689 Introduction to Electric Power Systems CE 181-or- RE 200 -or- Energy & Society ER 254 Electric Power Systems Advanced Energy Conversion Principles ARCH 249-002 Assessing Building Energy Use and Indoor Environmental Quality ARCH 249-002 Assessing Building Energy Use and Indoor Environmental Quality CE 268E Civil Systems & Environment CE 268E Civil Systems & Environment CE 268B Civil Systems & Environment CE 218A Air Quality Engineering ER 290 Seminar in Energy & Resources Transportation Sustainability Regulation of Energy & Environmental Quality EE 227BT Convex Optimization EE 227BT Convex Optimization EE 227BT Convex Optimization EE 228B Engineering Risk Analysis EE 229 Design of Cyber Physical Systems Statistics and Data Analysis Group CE 263N Scalable Spatial Analytics CE 264 Behavioral Modeling for Engineering, Planning, and Policy Analysis STAT 215A Statistical Models: T	THEORY		APPLICATION	
EE 221A	Controls Group		Power and Energy Group	
-or- ME C232 -or- Advanced Control Systems I	CE 295	Energy Systems and Control	EE 137A	Introduction to Electric Power Systems
ER 222 - or- Mc 237	EE 221A	Linear Systems Theory	CE 107	Climate Change Mitigation
ME 231A Experiential Advanced Control Design, aka Model Predictive Control and Optimization of Distributed Parameter Systems ME 233 Advanced Control Systems II (optimal, stochastic, & adaptive control) EE 223 Stochastic Estimation and Control ME 234 Multivariable Control Systems CE 290I Control and Information Management Parameter Systems MATH 126-or- MIT to to Partial Differential Equations AMTH 126-or- Partial Differential Equations MATH 222A/B -or- Partial Differential Equations CE 191-or- CE 297E Control and Optimization Models in Engineering EE 227BT Convex Optimization Models in Engineering Leave 270.6 Energy Regulation & the Environment EE 227BT Convex Optimization EE 228B Engineering Risk Analysis EC 289 Design of Cyber Physical Systems, & Projects CE 186 Design of Systems, & Projects CE 186 Design of Systems Optimization Sensors & Signals CE 289 Embedded System Design CE 264 Behavioral Modeling for Engineering, Planning, and Policy Analysis STAT 215A Statistical Models: Theory & Application CS 289A Introduction to Machine Learning	-or- ME C232	-or- Advanced Control Systems I	-or- ER 200	-or- Energy & Society
ME 231A Experiential Advanced Control Design, aka Model Predictive Control Advanced Control Systems II (optimal, stochastic, & adaptive control)	EE 222 -or-	Nonlinear Systems- Anal, Stab., Ctrl -or-	ER 254	Electric Power Systems
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