

| Date | Topic | Assignments (Due F@5p) |
|-------------------------------|--|---------------------------|
| W 01/20 F 01/22 | Introduction and Course Organization Motivation for energy systems & control | Survey |
| M 01/25 W 01/27 F 01/29 | Mathematical modeling System theoretic framework State-space and linear systems | Project Declaration |
| M 02/01 W 02/03 F 02/05 | Stability Energy storage: batts, FCs, UCs, CAES, flywheels Energy storage: batts, FCs, UCs, CAES, flywheels | HW 1 |
| M 02/08 W 02/10 F 02/12 | Parametric Modeling Gradient Algorithm Least Squares Algorithm | |
| M 02/15 W 02/17 F 02/19 | PRESIDENTS DAY Nonlinear Least Squares & Sensitivity Analysis State Estimation Problems in Energy Systems | HW 2 |
| M 02/22 W 01/24 F 02/26 | Open-loop Observers, Observability Observability & Luenberger Observer Luenberger Observer & Kalman Filter (KF) | Project Proposal |
| M 03/29 W 03/02 F 03/04 | KF & Extended Kalman Filter Estimation Case Study: Battery SOC Midterm Review | HW 3 |
| M 03/07 W 03/09 F 03/11 | IN-CLASS MIDTERM Optimization: Objective Fcns & Constraints Convex functions & Sets, Minimizers | |
| M 03/14 W 03/16 F 03/18 | Convex Programming (CP) Linear Programming (LP) Quadratic Programming (QP) | Progress Report |
| | SPRING RECESS | |
| M 03/28 W 04/30 F 04/01 | Gradient Descent Method of Lagrange Multipliers KKT conditions | (Moura on travel) HW 4 |
| M 04/04 W 04/06 F 04/08 | Intro to Optimal Control Case Study: Optimal HEV Energy Mgmt via LP Case Study: Optimal PEV Charge Schedule via QP | |
| M 04/11 W 04/13 F 04/15 | Dynamic Programming Case Study: Smart Appliance Scheduling Case Study: Optimal Resource & Allocation | HW 5 |
| M 04/18 W 04/20 F 04/22 | Markov Chains Stochastic Dynamic Programming (SDP) Model Predictive Control (MPC) | |
| M 04/25 W 04/27 F 04/29 | Cloud-based MPC for a Home Heating System TBD TBD | |
| F 05/06 | [RRR Week] CE 295 Symposium | Final Report |