

# Lecture Schedule

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## Contents

Each module will have an assignment associated that could be a simple quiz, a reflection piece or solving a LP model in R, Python or Excel. The readings associated with each module will be posted on Sakai. The proposed schedule below is subject to change. My initial plan is to cover all the material listed here but I might modify it if extra time is needed for some particular topics. I will provide updates via Sakai or Slack.

Note that we may have classes during energy week if there is a session or panel related to the topics discussed in class. If that's the case, you are supposed to attend the session in lieu of the class. And you are expected to write about it in your journal.

Week | Module | Date | Topic | Assignment |

1 | 1 | Aug 23 - 25 | Review of Electric Power Systems: Generator, Transmission, Distribution, Load, "Old" Grids and Its Problems, The Solution: Smart Grid, Introduction to Smart Grids or Modern Power Grids: Definition, Benefits, Opportunities and Challenges | |

2 | 2 | Aug 30 - Sep 1 | Smart Grid from Global Perspective: How energy distribution will change, ICT Perspectives, Smart-meter deployment, End user view, DSO view, AMI deployment experience Vermont and Sweden | |

3 | 3 | Aug 31 - Sep 4 | Smart Grid from Global Perspective: How generation will change, paradigm shift, renewable energy sources, challenges of renewable resource integration, Distributed Generation: definition, history, planning and operation | |

4 | 4 | Sep 6-8 | Rooftop PV study case, Solar Penetration Outlook, The Duck Curve and Possible Solutions | A1 |

5 | 5 | Sep 13-15 | Distributed Generation: challenges of DG integration, location, power quality and stability | J4 |

6 | 6 | Sep 20-22 | DER: Energy Storage Applications to Power Systems, Intro to LP in R using "lpsolveAPI" package | A2 |

7 | 6 | Sep 27 - 29 | Energy Storage Management, Residential PV+battery, Residential PV+battery study case: problem formulation | A3 |

8 | - | Oct 4-6 | Fall break, we will use the class on Wed to work on assignment and/or project | J5 |

9 | 7 | Oct 11-1 | Impact of DER on grid operation/scheduling and planning, ED problem with Renewables, Case study - Hydro-thermal scheduling Brazil | J6 |

10 | 8 | Oct 18-20 | Intro to Network Pricing, Economics of Transmission and Distribution Network Pricing, Revenue Requirement (CAPEX + OPEX) | J7 |

11 | 9 | Oct 25-27 | OPEX - Utility benchmark analysis, Data Envelopment Analysis | A4 |

12 | 9 | Nov 1-3 | Distribution Use of System Charges: Cost Allocation Part I - Principles and Assumptions | Cost Allocation Part II - Fixed cost methods, DC Power Flow | J8 |

13 | - | Nov 8-11 | Energy Week - no classes - use that time to attend events and work on project | |

14 | 10 | Nov 15-17 | Distribution Use of System Charges Cost Allocation Part III - Case Study - Part IV - Incremental/Marginal cost methods | A5 |

15 | - | Nov 22 | LDOC - Final Project Presentations | - |