

## EECS 598 Special Topic – Winter 2019

### Analysis of Electric Power Distribution Systems and Loads

Tuesdays & Thursdays, 9:00am-10:30am, 3427 EECS



This course covers the fundamentals of electric power distribution systems and electric loads. Most power system courses focus on analysis of transmission systems; however, with increased amounts of distributed generation (photovoltaics, small-scale wind), distributed storage, and controllable loads, it has become more and more important for researchers and power industry professionals to

understand power distribution systems. We will start with an introduction to distribution grids, including their components, typical topologies, and operational strategies. We will then study power flow in distribution grids and distribution transformers. Additionally, we will discuss the fundamentals of electric loads, including electric load modeling, analysis, and control methodologies. Course material will be from a combination of textbooks and recent research articles in the field. In addition to technical topics, we will also discuss energy economics and policy related to distribution grids and loads. All students will conduct an individual research project on a topic related to the course material.

#### Topics:

1. Introduction to distribution grids: components, topology, operation
2. Power flow in distribution grids
3. Distribution transformers
4. Fundamentals of electric loads
5. Electric load modeling, analysis, and control

Prerequisites: EECS 463 (or Permission of Instructor)

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