Course Description

Modeling for Energy Systems Analysis Fall 2021 ENV 716L.001

Nicholas School of the Environment Duke University

Course Description

This course is an introduction to the use of computer models and the methods of optimization and simulation for students interested in the analysis of energy systems. The course makes emphasis in the formulation of optimization problems and simulation models, and in the identification of the available methods to solve them.

Our goal is to enable students to formulate, implement, and use their own quantitative models to support private and public decision-making affecting the U.S. energy system and the environment. The applications and case studies presented deal with problems of energy systems, their externalities, and the government policies that address them.

Prerequisites

College-level calculus (including partial derivatives of functions of several variables), probability theory, and basic linear algebra (how to write - and solve - systems of linear equations in matrix form). Students should also be familiar with capital-sigma notation for compactly representing summation of similar terms and know the basics of Excel.