

**Spring Seminar Series**

**Department of Electrical and Computer Engineering  
Wednesday, April 26, 2023**

**Noon – 1:00 PM**

<https://temple.zoom.us/j/97871180459>

**Computational Methods for the Design and Operations of Electric Power Systems**

**SangWoo Park, Ph.D.**

**Assistant Professor, New Jersey Institute of Technology**

**Abstract:** Power systems around the globe are currently undergoing a major paradigm-shift following the need for more resilient and secure systems, and our society's commitment towards a carbon-free and sustainable future. This transformation of the power grid is met with many challenges. The already large-scale network is growing even bigger and more fine-grained as new components and participants are added to the grid. Higher penetration of renewable energy sources promotes sustainability, but it also brings more uncertainty and instability to the grid. Increasing volumes of data are produced through sensors, communication networks and human activities, which can bring great value in operating the system but also contains the risk of derailing the system if noise, gross errors, and malicious attacks are not dealt with properly. On top of all these issues, the innate nature of AC power poses serious difficulties in various computational methods. As a result, the design and operation of these systems needs major innovations in computational techniques. In this talk, I will first discuss some major challenges behind the modernization of power grids and explain why addressing them involves advanced computational tools. Then, I will present some of my recent research contributions related to nonlinear optimization and data analytics for large-scale power systems.



**Bio:** SangWoo Park is currently an Assistant Professor in the Department of Mechanical and Industrial Engineering at the New Jersey Institute of Technology. He received the B.S. degree in Environmental Engineering from Johns Hopkins University in 2016 and the M.S. & Ph.D. degrees in Industrial Engineering and Operations Research from the University of California, Berkeley in 2017 & 2022. He is the recipient of the Best Student Paper Award in the 2020 American Control Conference and the Marshall-Oliver-Rosenberger Fellowship at UC Berkeley.