



Reconnect Workshop 2022: Optimization

About Reconnect: Reconnect workshops expose faculty teaching undergraduates to current applications of mathematical and computational sciences and provide an opportunity for government or industry professionals to learn about recent research in related areas. The topic will be presented over the course of 4.5 days in a series of lectures and activities. Participants will be involved in activities that they and their students can continue to use and explore after the workshop. They will begin to draft modules that can be used in their classrooms and others around the country

Where: ETS Chauncey Conference Center, Princeton NJ

When: June 12-17, 2022

Organizers: Margaret (Midge) Cozzens, DIMACS, Rutgers University
 Kristin Hicks, Northeastern University
 Tamra Carpenter, DIMACS, Rutgers University

Primary Speakers: Robert Bosch, Oberlin College and Robert Vanderbei, Princeton University

Additional Speakers: Carl Crawford, CSUPTWO LLC, Jie Gong, Rutgers University, Eric Miller, Tufts University, Jun Zhuang, University at Buffalo, and others from SENTRY research teams.

The notion of optimization is ubiquitous in everyday life—nearly every decision, at its core, is an optimization problem. The broad field of “optimization” emerged to provide the language and tools to surmount complex problems in real applications, and optimization tools and algorithms have since transformed fields ranging from biology to finance. Optimization capabilities touch our everyday lives through more efficient supply chains, better traffic management, and more secure power grids. In the short history of the field of mathematical optimization, advances in underlying theory, practical implementation, and computing power have brought us from solving linear programs (LPs) with a few hundred variables to those with more than a million, and widely available general-purpose solvers make sophisticated tools for linear, integer, and nonlinear programming broadly accessible.

Reconnect 2022 will review classic methods for linear and integer programming with an eye toward introducing software tools and activities that are engaging and accessible for use with students. The workshop will also explore a variety of real-world applications that make use of optimization methods. Several researchers affiliated with the newly established DHS Center of Excellence, SENTRY, will provide an overview of SENTRY’s research mission and offer examples of how they will use optimization methods in the center’s research. These include allocating resources for disaster management, deploying “virtual sentries” to protect civilian spaces—so-called “soft targets”—around the country, and several others.

Registration fees, lodging, meals and travel: *Accepted participants from US academic institutions:* registration, lodging in a single room, and meals will be provided at no charge. Limited funds are expected to be available to provide partial support for travel and for international participants.

Deadline for Applications is March 15, 2022 or until all slots are filled. A link to the online application is provided on the Reconnect webpage (<http://dimacs.rutgers.edu/events/details?eID=1611>) and will be available by January 2, 2022. Applications must be submitted online and will be reviewed as they are received. If you applied to attend the 2020 Reconnect on Optimization, you may ask that your application be moved to this 2022 group of applications.

For more information: Contact Isha Deen-Cole or Midge Cozzens (ishadc@dimacs.rutgers.edu or mcozzens@dimacs.rutgers.edu) or visit the Reconnect webpage on the DIMACS website.