



Wisconsin National Data Consortium (WiNDC)

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Introduction to Applied General Equilibrium Modeling with the WiNDC Database

Short Summer Course

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This short course is intended to help graduate students and professional economists interested in how to do state-level policy analysis with applied general equilibrium models calibrated to the WiNDC version 3 (2017 base year) dataset. Lectures will be presented in person, live-streamed and recorded. Vaccinated participants may attend the course in person in Taylor Hall at the University of Wisconsin-Madison.

Course Overview

A. Getting Started with Economy-Wide Models (Monday)

This day will focus on the issues surrounding climate policy in the US. This will include market-based versus command and control, the double dividend debate and the implications of technical change. Motivation for this analysis will be provided by a survey of current and past carbon mitigation measures which have been implemented. We then introduce a numerical model based on WiNDC data with the BlueNote satellite accounts. We will go through a top-down view of the underlying theory and the model results. We will look at the steps required to run the model and construct Excel pivot tables and charts with model results. The learning objective for this first day is to see that participants who are new GAMS users will be able to run a GAMS model (specifying and solving scenarios and then comparing results). By the end of the session, participants will have a clear idea of how to operate a policy-oriented model and run scenarios on their own machines.

B. Introduction to Economic Equilibrium Analysis (Tuesday)

1. Calibrated choice (applied microeconomics)

Background reading for this lecture includes selected chapters from Varian's undergraduate and graduate textbooks and Rutherford's papers and lecture notes on CES functions.

2. Scalar algebraic modeling with GAMS (MCP and CNS)

- Getting started with GAMS Studio

Theory with numbers applications

- simple closed economy model

- open economy model

- multiregional model

C. Introduction to MPSGE (Wednesday)

Introduction to the MPSGE framework for applied general equilibrium modeling based on small examples derived from Jim Markusen's computational economics course. These include a variety of "theory with numbers" models which illustrate the range of applications of computable general models.

D. Input-output and social accounting-based models (Thursday)

1. GDP accounting and social accounting matrices.

Basic GDP identities with an introduction to the BEA tables and the methods involved in accessing those data. Conclude with an introduction to the WiNDC dataset.

2. Multidimensional versions of the GAMS/MCP and GAMS/MPSGE models which were introduced on Tuesday and Wednesday. Evaluating household welfare and employment impacts.

3. Introduction to issues in dataset constructions and management.

E. Policy Oriented Analysis with WiNDC (Friday)

1. Working with the WiNDC database:

- Aggregating to a given base year, given sectors and regions.
- Incorporating satellite data to the core WiNDC dataset: the energy-environment dataset BlueNote and canonical model
- Calibrating to BLS occupational categories.

2. Back to our sample application (each with short write-up, GAMS model and code for general simulations and pivot reports).

- a. Overview of the issues.
- b. Model structure -- using the WiNDC - BlueNote dataset to examine climate policy proposals.
- c. Assessing the distributional impacts across households and states of US climate measures (carbon taxes, border measures, and renewable portfolio standards)

Registration

To register, please send an email to the [WiNDC manager](#) stating your name, institutional affiliation, professional status (student or professional economist) and whether you intend to attend in person. The registration deadline is July 2, 2021.

The course is free of charge and we encourage participants to make a donation of \$500 to the Agricultural and Applied Economics Fund - 112039090 at the University of Wisconsin-Madison. Please go to <https://www.supportuw.org/how-to-give/>. You will have the option to give online or by mail.

For more details, please see the [course webpage](#).