# 1. Introduction To CGE Modeling

**Objective of the course**

This introductory course in Computable General Equilibrium (CGE) modelling provides rigorous training in building a standard static open-economy CGE model using GAMS programming language. Participants learn the core model blocks—production, consumption, trade, factor markets, macro closures and their calibration from an aggregated Social Accounting Matrix (SAM) and elasticities. Through hands-on, step-by-step model construction, the course builds capacity for economy-wide policy simulation and establishes a solid foundation for intermediate and advanced dynamic CGE modelling of fiscal, trade, and external shocks. The course is delivered in five modules as follows.

- **Module 1: Introduction to SAMs and modelling in GAMS**
  - Introduction to CGE models (theory)
  - Empirical use of CGE models
  - Construction of CGE databases from SUT/SAM
  - Introduction to GAMS software and coding language
  - Building a simple model in GAMS
  - Using scalars, Sets and vector specifications and solving more than one model
  - Time, tables, upper bounds, lower bounds; and fixing variables
  - Loops, lags, leads, positive variables,
  - Mapping set elements
  - Linear programming in GAMS
  - Group exercise 1: Linear programming in GAMS
- **Module 2: Input-Output Modelling and Standard CGE in GAMS**
  - Exporting results to excel
  - Specifying a dynamic optimization model
  - Input-Output Table Model in GAMS
  - Solvers in GAMs for CGE models (MINOS, PATHNLP, CONOPT and PATH)
  - Building Walrasian CGE model in GAMS
  - Calibration of CGE models
  - Debugging of errors in CGE models
  - Interpretation of economy-wide results
  - Importing data into CGE model from Excel
  - Adding sets to the standard CGE model
  - Group exercise 2: Standard CGE Model – closed economy
- **Module 3: Standard CGE model with factor markets and intermediate demand**
  - Debugging of CGE models
  - Adding intermediate demand to SAMs data
  - Adding factor market to SAMs data
  - Integrating factor markets into the Standard CGE model
  - Integrating intermediate demand into the Standard CGE model

- Group exercise 3: Calibrating a Standard CGE Model with intermediate demand

- **Module 4: Standard CGE model with government and saving-investment accounts**
  - Adding government account to SAMs data
  - Adding saving-investment to SAMs data
  - Building the government closure in the standard CGE model
  - Building the saving-investment closure in the standard CGE model
  - Simulating the extended standard CGE model
  - Group exercise 4: Standard CGE Model with government and saving-investment accounts
- **Module5: Open economy Standard CGE model**
  - Adding foreign sector (import, export and transfers) to accounts to SAMs data
  - Adding import, export and transfers equations to the standard CGE model
  - Building the Rest of the World closure in the standard CGE model
  - Policy simulations in an open economy static CGE
  - Interpretation of CGE results and reporting formats
  - Group exercise 5: Standard CGE Model with Rest of the World
  - Group presentation of results on CGE Modelling for policy Analysis (hands-on Real World Policy Simulation)

**Mode of delivery**

The course is delivered through an intensive, hands-on approach in which participants systematically build a standard CGE model, over the duration of the training. The programme is highly sequential, requiring full attendance at all sessions, as each step builds directly on the previous one. Participants work in teams to enhance peer learning and methodological coherence, while each participant is required to have an individual laptop and mouse for practical implementation. By the end of the course, each team presents policy simulation results generated from their model. For the online delivery option, participants are required to submit all assignments within the stipulated timelines to ensure completion within the scheduled period, as extensions may incur additional facilitation costs. To apply for this course, fill in the form below or send an email to apply@macrosolve.net or macrosolveinfo@gmail.com.