

**Basic GAMS Modeling
An Introductory Class
Frisco Colorado, July 30-Aug 1, 2012**

This is an offering of a Basic GAMS class followed immediately by an advanced class. This will be a three day Basic GAMS class designed for those interested in applying GAMS modeling to the study of management decisions in the business and policy arenas. It will provide exposure to modeling examining the impact of changing prices, risk conditions and investment opportunities as they influence firms, the environment and the sector. Students are not expected to know GAMS ahead of time The whole class will deal with the topics of how to formulate GAMS based models starting from no assumed knowledge but working up through advanced formulation (dealing with price responsive demand, investments and risk as well as GAMS model debugging and improved output presentation topics. The outline is [here](#).

Contents

Next course:	2
Introduction to the Instructor	2
What will the course help you learn?.....	3
Brief Course Description	3
Topics covered	3
See a more detailed outline	4
Assumed Background and Motivation of Participants	4
Course Objectives	4
Course Presentation Method	5
By taking this course you will	5
Things to Do Before the Class	5
Course History and past Participants	6
Need More Information?.....	6
Course Site and time Schedule	7
Location Frisco course:.....	7
Daily Schedule = Overview Frisco, Colorado course:.....	7
Course introduction and detailed schedule	7
Meals, Accommodations, and Travel	7
Fee, Payment, and Registration	8
How to Register for Course	8

Next course:

- Frisco, Colorado -- July 30 (8 am) – Aug 1 (5pm), 2012 (3 days -- Monday - Wednesday)

For more information select any one of the following topics:

- [Instructor](#)
- [What Will You Learn By Taking the Course?](#)
- [Brief Course Description](#)
- [Assumed Background and Motivation of Participants](#)
- [Class Objectives](#)
- [Detailed Course Outline](#)
- [Course Presentation Method](#)
- [Materials and Experiences You Will Get by Attending the Workshop](#)
- [Things to Do Before the Class](#)
- [Course History and past Participants](#)
- [Course Site and Time Schedule](#)
- [Course Fees](#)
- [Need More Information?](#)

Introduction to the Instructor

Bruce A. McCarl is a University Distinguished Professor and a Regents Professor at Texas A&M University in College Station Texas specializing in Mathematical Programming applications in Agricultural Economics. He has wide teaching, research, consulting and applied analysis experience in the application of mathematical programming and GAMS to industry, and government. ([Read about some projects he has done](#)). He wrote the Expanded Users Guide distributed with GAMS

He has been on the Texas A&M faculty since 1985 and previously taught at Oregon State University, Purdue University and Pennsylvania State University. Dr. McCarl is a winner of awards from USDA, and USEPA for his optimization applications. He was part of the IPCC group that was awarded the Nobel Peace Prize. His is Associate Editor of Climatic Change. He was Editor of Choices and Associate Editor of Water Resources Research and the American Journal of Agricultural Economics. Dr. McCarl earned a B.A. in Business Statistics from the University of Colorado and a Ph.D. in Management Science from the Pennsylvania State University.

Dr. McCarl taught his first GAMS short course in 1986 and has been a GAMS user since 1985. He has written the [GAMSCHK](#) modeling assistance product and the [Expanded User Guide](#) which is being freely distributed with releases of GAMS. He has consulted

on optimization and GAMS use with employees of First National Bank of Maryland, Tasmanian Hydropower, Neodyme, USCOE, American Express, USAID, Government of Egypt, International Harvester, World Bank, Department of Energy, Bonneville Power, Electric Power Research Institute, USDA, and USEPA among others.

(Return to [Top of document](#))

What will the course help you learn?

You will learn techniques for doing firm impact modeling analysis including treatment of risk and investment modeling using the professional's choice in modeling software -- GAMS. The 3-day course will provide you with learning experiences regarding questions such as:

- Do you find it desirable to do a model on how the firm might act given changes in prices, programs, policies, regulations or environmental forces? Learn how to model business and agricultural entities and reflect the influence of such forces on production processes and markets.
- Do you find yourself needing to model reaction to risk and wish to incorporate risk aversion? Learn techniques for modeling risk avoiding behavior in situations where decision makers can or cannot exercise recourse in adjusting their decisions
- Do you find yourself working on indivisible investments? Learn integer programming modeling and techniques for getting the problems to solve.
- Do you want to put a CGE model into MCP format but are unsure how to do it? Learn basic CGE modeling and MCP specification.
- When modeling does it take you a long time to construct, verify , use the model for comparative studies and convert output into meaningful reports? Learn techniques which increase the efficiency with which you use GAMS.
- Do you find yourself curious about how others model large problems? See the way a several complete modeling systems are implemented and receive a copy for your later examination

(Return to [Top of document](#))

Brief Course Description

Topics covered

- Basic GAMS modeling and use of the IDE
- Building firm models with GAMS
- Improving your output

- Adding risk considerations to the firm model with and without recourse
- Modeling transportation of goods and adding price responsive considerations to the model to examine pricing or sectoral policy
- Linking with a spreadsheet
- Developing a basic CGE model and specifying as an MCP
- Implementing an impact analysis system
- Specifying conditionals
- Handling investment indivisibilities
- Solving Integer programs
- Intermixed treatment on GAMS usage including
 - How to do efficiently verify model structure and debug flaws
 - The latest features in new GAMS releases

[See a more detailed outline](#)

(Return to [Top of document](#))

Assumed Background and Motivation of Participants

The course will be instructed assuming those present wish to do impact analyses using GAMS but are not very familiar with the GAMS language. Participants should wish to receive practical instruction on topics that will enable them to easily do impact analyses and increase the efficiency and accuracy with which they use GAMS in modeling settings.

(Return to [Top of document](#))

Course Objectives

- To teach workshop participants techniques allowing them to
 - Learn to use GAMS
 - Conduct impact analyses
 - Incorporate risk into models
 - Handle Investment analysis
 - Use GAMS efficiently.
 - Better diagnose causes of improperly solving models
 - Enhance computer and human efficiency when using GAMS particularly when dealing with large models
 - Enhance the usefulness of GAMS output.
 - Use undocumented and or new GAMS features.
 - Teach users how to use [GAMSCHK](#), [GAMSIDE](#) and the GAMS library builder
- To carry out this instruction in an applied environment exposing students to a variety of modeling issues and techniques

(Return to [Top of document](#))

Course Presentation Method

The class will mix hands on computing sessions with computer based lectures. The hands on sessions will involve participants working in groups of 2-3 throughout the workshop. The groups will be provided with PCs loaded with the latest available GAMS versions and all class examples. Participants can bring their own laptops capable of having 20 or so megabytes of software loaded on them from a CD-ROM also access to either a floppy or capability to take files from a USB 2.0 removable pen drive). During the hands on sessions the instructor will interact with the groups on class topics, questions and general GAMS usage. Laptops may be required depending on location as covered in the registration page.

(Return to [Top of document](#))

By taking this course you will

- Receive training on the topics above
- Be exposed to others attending the class learning about their impact analysis usage
- Interact with the instructor who is a very experienced impact analysis modeler
- Be trained in the use of software and receive copies for your use of

[GAMSCHK](#) analyzes GAMS models and assists in their use
GAMS-IDE PC editing, execution and debugging environment

- Receive manuals on GAMS usage, and class notes including

[A Guide to Algebraic Modeling Using GAMS](#) by McCarl and Spreen -- a book on agricultural modeling using GAMS

McCarl's GAMSCHK writeup

McCarl's GAMS User Guide

The latest Solver Manuals from GAMS

(Return to [Top of document](#))

Things to Do Before the Class

The class will be conducted using PCs, Students will have available an Editor developed by GAMS which resides in the GAMS-IDE integrated development environment. Students wishing to use other editors should feel free to bring such. Note course software will be distributed on CD-ROM.

Students wishing to do reading before the class can download (using the Adobe pdf Reader)

[Download the free Adobe Acrobat Reader](#)

- the [GAMSCHK writeup](#)
- [A paper using GAMSCHK](#)
- [The course setup and schedule](#)
- [A copy of McCarl and Spreen](#)

[\(Return to Top of document\)](#)

Course History and past Participants

This course has been previously since 1998 at least twice a year. In addition courses with much of the material herein has been taught by Dr. McCarl at Texas A&M, Oregon State and Purdue for over 25 years. Prior participants in this training who have used concepts in their jobs include individuals employed in the insurance, banking, agricultural, telecommunications, government and energy arenas.

(Return to [Top of document](#))

Need More Information?

Additional course and related material is available in the web pages linked to this one giving the

- [Detailed Course Outline](#)
- [List of instructor projects](#)
- [GAMSCHK description](#)
- [The course setup and schedule](#)
- [See a sample of basic course notes](#)
- [See a sample of more advanced course notes](#)

Related material is on

- [McCarl's home page](#)
- [the GAMS home page](#)

Other questions may be addressed by email to brucemccarl@gmail.com or courses@gams.com

or to

Bruce McCarl
2100 Fawn Court

College Station, TX, 77845
979-693-5694(phone) 979-696-2263(fax)
(Return to [Top of document](#))

Course Site and time Schedule

Frisco is a town located in Summit County amidst the Rocky Mountains and bordering Lake Dillon is conveniently off of I-70 and only 80 Miles West of Denver at 9000 feet or 3000 meters. For more see http://www.discovercolorado.com/Summit_County_Colorado/

Location Frisco course:

Best Western Lake Dillon Lodge
Summit = County-Frisco, Colorado
I-70 Exit 203
PO Box 552
Frisco, Colorado 80443
United States
Tel: (800)727-0607 or (970)668-5094
Fax: 1-970-668-00571
<http://lakedillonlodge.com/>

Daily Schedule = Overview Frisco, Colorado course:

Check-in on the first day: 8:00 - 8:15 a.m.
Morning classes: 8:00 a.m. - 12:00 noon
Afternoon classes: 1:30 - 5:30 p.m.

Course will go 3 days

Course introduction and detailed schedule

Meals, Accommodations, and Travel

Refreshments will be available starting at 8:00 am and throughout the day, but other meals, accommodations, and travel are not included in the fee. Participants are responsible for making their own arrangements.

The Best Western has a block of rooms. When making reservations identify yourself as a participant in the GAMS Computer Modeling Course. You will need to call the hotel directly in order to receive the group rates at 1-800-727-0607. Other hotels are available in the area including a Holiday Inn, and a Ramada very nearby. The visitors bureau provides a web page (that you can find by searching [Frisco Colorado Lodging](#)) with lodging details and visitor information. Larger places may be rented through places like Wildernest <http://www.wildernest.com/> or Quiet Pines Lodging <http://www.highcountrylodges.com/>.

The hotel is served from the Denver Airport by [Colorado Mountain Express](#) 800-525-6363 or 970-926-9800 vans take you to the area but go to the Frisco Transfer station for the cheapest rates (200 yards from Hotel) many services, restaurants, a Walmart and a grocery store are within walking distance, so a rental car is not a necessity. Also local bus service is free. Driving takes 1.5 hours. [Greyhound](#) also has an inexpensive bus service from Denver to Frisco (under \$20 each way as of June 2011)

Fee, Payment, and Registration

The course fee depends on payment date and computer requirement. The following fee schedule applies:

For participants bringing an eligible lap top computer

Fee normal participant - if payment received 14 or more days prior to start of class: \$1250

Fee - university student, if payment received 14 days prior to start of class: \$850

Fee - if paid later than 14 days prior to start of class: \$1350

Fee - university student, if paid later than 14 days prior to start of class: \$950

For participants not bringing an eligible lap top computer

Fee normal participant - if payment received 14 or more days prior to start of class: \$1350

Fee - university student, if payment received 14 days prior to start of class: \$950

Fee - if paid later than 14 days prior to start of class: \$1450

Fee - university student, if paid later than 14 days prior to start of class: \$1050

One may take this class jointly with the Advanced Class for an additional \$500 for non students and \$400 for students.

An **eligible lap top** must

- o run windows 98 or greater,
- o be able to read CD-ROMs and
- o have more than 30 megabytes of available disk space

The fee includes an evaluation version of GAMS, a complete set of course notes ([see sample course notes](#)), and a CD containing all class examples, programs and backup documents. Checks, Visa, MasterCard, American Express, and purchase orders are accepted.

How to Register for Course

To register by phone, fax, or e-mail, contact:

Course Coordinator (John O'Reilly)

GAMS Development Corp

tel: 202-342-0180

fax: 202-342-0181

email: courses@gams.com

To register by mail, send name, address, phone, fax, and email address (with payment or purchase order) to:

Course Coordinator (John O'Reilly)
GAMS Development Corp.
1217 Potomac St, NW
Washington, D.C. 20007