

## **Advanced GAMS Modeling Frisco Colorado, Aug 1-Aug 3, 2012**

This is an offering of an Advanced GAMS class preceded immediately by an Basic class. This will be a three day Advanced GAMS class designed for users acquainted with GAMS who wish to improve their skills in terms of GAMS usage and in model debugging. It will cover many topics- see the [outline](#) for details.

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### **Next course:**

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

For more information select any one of the following topics:

- [Instructor](#)
- [What Will You Learn By Taking the Course?](#)
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## 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. He 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.

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## What will the course help you learn?

You will learn advanced techniques for better using the professional's choice in modeling software -- GAMS. The 3-day course will provide you with learning experiences regarding the following questions:

- Have you ever had a model which was infeasible, unbounded or worse yet optimal but nonsensical? Learn approaches that reveal where problems are in models so you can fix them.
- Does it take you a long time to construct, verify, use for comparative studies and convert output into meaningful reports? Learn techniques which increase the efficiency with which you use GAMS.
- Do you have a GAMS implementation that takes a long time to compute, generate or solve? Learn ways to find out the cause of extensive solution time and ways that have, in cases, reduced execution times by an order of magnitude or more.
- Have you ever talked to an experienced modeler and found out there are powerful things GAMS can do that you don't know about because of hidden features or a lack of treatment in the documentation? Learn a number of such features.
- Have you heard about GAMSIDE, GAMSCHK and wonder how they work? Learn about them from the developer of GAMSCHK who has used and taught the IDE since early 1998.
- Did you know GAMS has features that can cause you to find variable values for variables you have eliminated or that allow you to alter your data without any reaction from the model. Learn to protect yourself against these difficulties.
- Do you find yourself modeling large problems? Learn techniques to facilitate your and others understanding, documentation, ease of use and level of comfort with such models.
- Do you want to link GAMS to a spreadsheet either just using and returning data or doing a more interactive approach? Or do you even want to run GAMS in the background in a manner transparent to the user? Learn techniques to allow this.

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## Brief Course Description

### Topics covered

- Using conditionals
- How to do efficiently verify model structure and debug flaws
- The latest features in new GAMS releases
- Fixing models which misbehave
- Using macros

- Using GAMSCHK
- Using GAMSIDE
- Increasing the efficiency with which you use GAMS
- Reducing computer time and memory requirements
- Enhancing the usefulness of GAMS output
- Links with spreadsheets and other programs
- Things you may not know GAMS can do - tips
- Using an advanced basis

[See a more detailed outline](#)

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## 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.

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## Course Objectives

- To teach workshop participants techniques allowing them to
  - 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 a practical GAMS application setting exposing students to a variety of modeling issues and techniques

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## 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.

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## 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

PUT\_TOEXCEL.gms,  
PUT\_TOHTML.gms

Code that allows greater control of output ordering plus sending of sets or parameters to either an HTML file or EXCEL.

GAMS-IDE

PC editing, execution and debugging environment

GAMS 2.50

The latest GAMS release

- Receive manuals on GAMS usage, and class notes including

So Your GAMS Model Didn't Work Right A Guide to Model Repair by McCarl and Meeraus

GAMS Users Guide version 2.50 - a through update

McCarl's GAMSCHK, REFREADER, PUT\_TOHTML, PUT\_TOEXCEL, and GNUPLTTY writeups

The latest Solver Manuals from GAMS

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## Things to Do Before the Class

The class will be conducted using PCs, Students will have available an Editor which resides in the GAMS-IDE integrated development environment. Students wishing to use other editors or their own laptops 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](#)
- [Advanced GAMS usage tips](#)
- [A paper using GAMSCHK](#)
- [Notes on use of the GAMSIDE](#)
- [The course setup and schedule](#)

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## 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.

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## 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](mailto:brucemccarl@gmail.com) or [courses@gams.com](mailto:courses@gams.com)

or to

Bruce McCarl  
2100 Fawn Court  
College Station, TX, 77845  
979-693-5694(phone) 979-696-2263(fax)

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## **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/](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 Basic 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](mailto: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