

**Basic GAMS Modeling
An Introductory Class
Dillon Colorado, June 11-June 13, 2018**

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](#).

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Next course:

- Dillon, Colorado -- June 11 (8 am) – June 13 (5pm), 2018 (3 days -- Monday - Wednesday)

For more information select any one of the following topics:

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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. 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.

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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

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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](#)

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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
 - 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

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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
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 Expanded GAMS User Guide

The latest r GAMS release

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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](#)

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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 or courses@gams.com

or to

Bruce McCarl
2100 Fawn Court

College Station, TX, 77845
979-693-5694(phone Sept-May 1)

Bruce McCarl
352 Lake View Drive
Po Box 24219 (for any usps mail)
Silverthorne, Colorado 80498
Mobile: (979) 204-6023 (May 1-Aug 31)
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Daily Schedule

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](#)

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: \$1450
- 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: \$1550
- Fee - university student**, if paid later than 14 days prior to start of class: \$1050

For participants not bringing an eligible lap top computer

- Fee normal participant - if payment received 14 or more days prior to start of class: \$1550
- Fee - university student**, if payment received 14 days prior to start of class: \$1050
- Fee - if paid later than 14 days prior to start of class: \$1650
- Fee - university student**, if paid later than 14 days prior to start of class: \$1150

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

**** Generally a student is one who is full time at the university being paid at a student rate or being unfunded. It is not someone finishing up a degree while working at a company or university earning non student wages.**

An **eligible lap top** must

- o run windows 98 or greater or an emulator on a Mac,
- o be able to read CD-ROMs or a memory stick 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 file given to you on CD or downloaded from a memory stick or Dropbox 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
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
GAMS Development Corp.
2751 Prosperity Avenue
Suite 210
Fairfax, VA 22031

Lodging reservations must be made separately.

Course Site

Dillon is a town located in Summit County amidst the Rocky Mountains and bordering Lake Dillon. It 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 Dillon course:

Best Western Ptarmigan Lodge
652 Lake Dillon Drive
P.O. Box 218
Dillon, CO 80435
I-70 Exit 205
Tel: (970) 468-2341
stay@ptarmiganlodge.com
www.ptarmiganlodge.com

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 Ptarmigan Lodge has a block of rooms at a cost of \$90 per night they are holding until May 11. 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 [970-468-2341](tel:970-468-2341) on or before May 11 or go to the web site https://www.bestwestern.com/en_US/book/hotel-rooms.06098.html?iata=00171880&ssob=BLBWI0004G&cid=BLBWI0004G:google:gm:b:06098 (which may give a higher rate) . Other hotels are available in the area including a Comfort Suites, A Hampton, a Super 8 and Dillon Inn nearby. The visitors bureau provides a web page (that you can find by searching Dillon Colorado Lodging) with lodging details and visitor information. Larger places for groups may be rented through places like Wildernest <http://www.wildernest.com/> or 5 Diamonds Lodging <http://www.highcountrylodges.com/>.

To fly in go to the Denver Airport – **do not** go to Eagle Vail unless you are renting a car.

The hotel is served from the Denver Airport by several van companies
[Colorado Mountain Express](http://www.coloradomountainexpress.com/) 800-525-6363 or 970-926-9800 vans
Peak 1 express <http://www.mountainshuttle.com/>
Summit express <http://www.summitexpress.com/scheduled-shuttle-service/denver-airport-to-Frisco-co-shuttle/>
[Greyhound](http://www.greyhound.com/) also has bus service from Denver to nearby Frisco (under \$20 one way in June 2011) but at limited times with a transfer in downtown Denver.

All take you to the area. Go to the Frisco Transfer station for cheapest rates (2 miles from Hotel)

Many services, restaurants, and a grocery store are within walking distance. Also local bus service is free. Driving from Denver airport takes 1.5 hours.