Basic to Advanced GAMS Class

On Line Version Summer - 2020

Introduction

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Basic to Advanced GAMS Class Introduction
Objectives and Method

A. Learning objectives

1. GAMS and GAMS use
   a. Will start elementary but go fast
   b. Backup provided by examples and documents

2. Firm Impact Analysis risk neutral and risk averse

3. Investment Analysis

B. Time is short -- Back up Course Materials

1. Reference materials on pdf backing up course
2. Personalized PDF of Overheads
3. Zip file
   a. All class examples
   b. Reference Materials

C. Mix of listening and doing hopefully about 60/40

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Class materials – a guide to their structure

This class is supported by a number of reference documents and class examples.

The fundamental support documents are the **overheads** that are distributed in the notebook. The overall course outline also indicates the name of the overhead set that will be under use during each course segment.

The overheads refer to a number of other course support documents and class examples. These include **class examples**, and **reference text materials**.

Class examples Generally, the class examples appear in the subdirectory **example** and are then contained in the subdirectory consistent with the name of the overheads. Thus, when working with the introductory material the overheads are called **gamintro** and the class example files are in the **example/gamintro** subdirectory. Generally I try to place filenames in **green** within the overheads.

Reference text materials. Generally the reference text materials appear under the subdirectory **document**. In the class overheads references to these materials are colored in **purple**.

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Class materials – a guide to their structure

A list of part of the Reference Documents and their Function

Reference Item Name	Class Intro	Basic GAMS	Firm Analysis Modeling	Multiple Locations	GAMS for Applied Modeling	Improved Output / Spreadsheets	CGE Modeling	Firm Risk Modeling	Indivisible Investment modeling
Outline	X								
Newbook.pdf		X		X	X	X		X	X
cgecoursenotes.htm, cgeingams.pdf		X			X		X		
erwinhomepage.htm		X			X	X			X
Fixmodel.pdf		X	X		X	X			
Rutherford.htm					X	X	X		
McCarl User Guide (through IDE)		X			X	X	X		X
Tips		X			X				
Usegck					X				
Probab									X

Other documents can be gotten from GAMS web site www.gams.com and www.gams.de

Basic to Advanced GAMS Class Introduction
Additional Reference Documents and their Function

Reference Name[a]	Brief Title	GAMS Features	Improved GAMS usage	Model Debugging	GAMSCHK Usage	Large Scale Modeling
fixmodel.pdf	So Your GAMS Model is not Working Right by McCarl	X	X	X	X	X
gnupltxy.pdf	GNUPLTXY Users guide by Schneider	X	X			
Newbook.pdf	Applied Math Programming by McCarl and Spreen		X	X		X
Rutherford.htm	Web page acessing utilities by Rutherford	X	X			
Sensitivity Analysis.htm	GAMS document on sensitivity analysis				X	
tips.pdf	Tips on GAMS usage by McCarl	X	X			
usegck.pdf	An article on using GAMSCHK			X		X
erwinhomepage.htm	Erwin Kalvahagen's web site with a number of utilities		X	X		X
createlib.pdf, uselib.pdf	Material on building and using library in IDE	X	X			
gamsmodeling.pdf, lp.pdf, mip.pdf	Erwin Kalvahagen's book chapters on applied GAMS modeling	X	X			X
The Excel Interface Doc.htm	XLIMPORT, XLEXPORT, XLDUMP documentation	X	X			
cgecoursenotes.htm	CGE class notes	X	X			

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Class materials – a guide to their structure

Zipfile Contents

Document subdirectory	All resource materials
Example subdirectory	All examples plus some other models. Generally accessed through IDE library
Yourwork subdirectory	Blank to start. Present to catch your work
Fixmodelsubdirectory	Examples from fixmodel book that is in document directory
zipfile subdirectory	Installation files as follows
mccarlclass.exe	contains all class files. Run this to install files without default write protection (which happens if you copy in the cd)
gamsadds.exe	contains all additions to GAMS system mainly documents for docs directory and inclib files like gnupltxy.
Root directory	contains setup.bat that installs self extracting archives, along with installation instructions and class license file

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Course Schedule

Day 1 (all times US Mountain – Denver)

8:00-8:30	Introduction A. Participant Introduction B. Class Introduction	
8:30-9:30	Intro to GAMS part 1	gamintro
9:30-10:00	Break and Hands on 1	
10:00-11:00	Intro to GAMS part 2 Model Inspect/Document	gamint2 inspect
11:00-11:30	Break and Hands on 2	
11:30-12:15	Power of GAMS	power
12:15-1:15	Firm Modeling	firmimp
1:15	Recess for day	
1:15- 1:45	Optional dialogue session	
Over night	Hands on 3 and possibly 4	

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Course Schedule

Day 2 (all times US Mountain – Denver)

7:30-8:00	Question session	
8:00-8:40	Quick Conditionals and Report Writing	qcondrep
8:40-9:15	Finish Firm Modeling	firmimp
9:15-9:45	Good Modeling Practice	goodmodl
9:45-10:15	Hands on 5	
10:15-11:15	Fixing Misbehaving Models	fixmod
11:15-12:00	Hands on 6	
12:00-12:30	Multiple Locations - transportation	multiloc
12:30-1:15	Forming and Solving NLPs in GAMS	nlp
1:15	Recess for day	
1:15- 1:45	Optional dialogue session	
Overnight	Hands on catch up (any of your choice)	

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Course Schedule

Day 3 (all times US Mountain – Denver)

7:30-8:00	Question session	
	Advanced Class Joins	
8:00-8:15	Advanced Class Introduction	
8:15-9:15	Using GAMSTUDIO	useide
9:15-9:45	Hands on 8	
9:45-10:30	Controlling Algebra - Conditionals and Sets	condition
10:30-11:15	Hands on 9	
11:15-12:00	Doing a Comparative Analysis	compare
12:00-12:45	CGE modeling	CGE
12:45	Recess for day	
12:45- 1:15	Optional dialogue session	
Overnight	Comparative part of 11 and if interested 13	

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Course Schedule

Day 4 (all times US Mountain – Denver)

7:30-8:00	Question session	
8:00-8:45	Output Improvement and Management	output
8:45-9:30	Hands on 10	
9:30-10:15	Spreadsheet Links	link
10:15-10:45	Hands on 11	
10:45-11:45	Using GAMS MIRO	
11:45-12:00	Basic Wrapup	
12:00-1:00	Pre-solution Checking	presol
1:00-1:10	Hands on Introduction	handson
1:10	Recess for Day	
1:10- 1:45	Optional dialogue session	
	Farewell to Basic Class People	
Overnight	Hands on 14	

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Course Schedule

Day 5 (all times US Mountain – Denver)

Advanced and Basic to Advanced People only

7:30-8:00	Question session	
8:00-8:45	Small to Large Model Development	smllrg
8:45-9:30	Calculations	calculat
9:30-10:15	Hands on 15	
10:15-10:45	Conditional Compilation	condcomp
10:45-11:45	Post Solution Debugging of Nonsensical Models	unreal
11:45-12:30	Hands on 16 and break	
12:30-1:15	Scaling in GAMS	scale
1:15	Recess for day	
1:15- 1:45	Optional dialogue session	
Overnight	Hands on 17	

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Course Schedule

Day 6 (all times US Mountain – Denver)

Advanced and Basic to Advanced People only

7:30-8:00	Question session	
8:00-8:30	Fixing Execution Errors	execerr
8:30-9:30	Fixing Unbounded and Infeasible Models	unbinf
9:30-10:00	Break and Hands on 18	
10:00-10:45	Execution Time Speed and Memory	speedup
10:45-11:15	Saves and Restarts	savrestar
11:15-12:00	Break and Hands on 19	
12:00-12:30	Advanced Bases	advbasis
12:30-12:50	Solution, Solvers and Reformulations	solver
12:50-1:00	Wrap It Up	wrapup
1:00	Workshop adjourns	
1:00- 1:30	Optional dialogue session	