

Advanced GAMS Class
Introduction

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Advanced GAMS Introduction

Objectives and Method

A. Learning objectives

1. Better use of current GAMS
2. Advanced features in GAMS
 - a. Will introduce many but go fast
 - b. Backup provided by examples and documents
3. Model Debugging
 - a. Within GAMS
 - b. With GAMSCHK
4. Improved large Scale Modeling

B. Time is short -- Extensive back up Course Materials

1. Course reference backup on pdf
2. Overhead copies
3. CD-ROM
 - a. All class examples
 - b. Reference Materials

C. Mix of listening and doing hopefully about 50/50

Advanced GAMS Introduction

Class Conduct

Class materials – a guide to their structure

This class is supported by documents and class examples.

The fundamental documents are the **overheads** which are distributed in your **notebooks**. The overall course outline indicates the name of the overheads that will be under use during each course segment.

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

Class examples are in the subdirectory **example** and are contained in a subdirectory that is consistent with the name of associated overhead series. Thus, when working with GAMSIDE material the overheads are called **useide** and the class example files are in the **example/useide** subdirectory. Generally I try to place filenames in **green** within the overheads.

Advanced GAMS Introduction
Class Conduct
Class materials – a guide to their structure

Reference materials. Generally the reference materials appear under the subdirectory **document** or in the **GAMS User Guide** that I have written which is accessed through the IDE. In the class overheads references to these materials and to other overheads are colored in **purple**.

Class applications. During the class there will be references made to several real applications. One is provided to you. The files implementing the U.S. agricultural sector model is kept under the subdirectory ASM.

Advanced GAMS Introduction

Overheads and their Function

Overhead Set Name	Title	Class Intro	New Features	Improved GAMS usage	Model Debugging	GAMSCHK Usage	Large Scale Model
CLASSMAT	Introduction and Schedule	X					
USEIDE	Using GAMSIDE		X	X			
LIBRARY	Creating and using your own Library in the IDE		X				
SMLLRG	Small to Large Model Development and Debugging			X	X		X
LOOKMODL	Looking at your GAMS model		X			X	
OUTPUT	Output improvement and management		X	X			
LINK	Links with Other Programs		X	X			X
UNREAL	Post Solution Debugging of Nonsensical Models		X		X	X	X
CONDITON	Controlling Algebra - Conditionals, Tuples and Sets		X	X			X
CONDCOMP	Conditional Compilation		X	X			
UNBINF	Fixing Unbounded and Infeasible Models		X		X	X	X
CALCULAT	Calculations			X			X
PREOPT	Pre solution Checking of GAMS models		X		X	X	X
COMPARE	Doing a Comparative Analysis		X	X			
CUSTOM	Customizing the GAMS Environment		X	X			
SCALE	Scaling in GAMS		X		X	X	X
EXECERR	Fixing Execution Errors			X	X		
NLPMIP	GAMSCHK with NLPs and MIPs		X		X	X	
SAVRESTR	Saves and Restarts			X			X
ADVBASES	Advanced Bases		X		X		X
SPEEDUP	Speeding up GAMS Execution Time		X	X	X		X
MEMORY	Memory Use Diagnosis		X	X	X		X
SOLVER	Solution, Solvers and Reformulations			X			X
WATCHOUT	Features to Watch out for			X			X
WRAPUP	Wrap up	X	X				

Advanced GAMS Introduction

Main 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 accessing 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, XLEXPOR, XLDUMP documentation	X	X			
cgecoursenotes.htm	CGE class notes	X	X			

Advanced GAMS Introduction

CD-ROM 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
Adobe subdirectory	Copy of Adobe PDF reader
Fixmodelsubdirectory	Examples from fixmodel book that is in document directory
zipfile subdirectory	Installation files as follows
advgams.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

Advanced GAMS Introduction and Schedule

Course Schedule

Monday

8:30-8:45	Introduction a. Participant Introduction b. Class Introduction and Resources	classmat
8:45-9:20	Using GAMSIDE	useide
9:20-9:30	Using the Library	Library
9:30-9:45	The Users Guide	
9:45-9:50	Hands on Introduction	handson
9:50-10:30	Break and Hands on 1	
10:30-11:15	Small to Large Model Development	smlrg
11:15-12:00	Looking at Your GAMS model	lookmodl
12:00-1:15	Lunch	
1:15-2:15	Output Improvement and Management	output
2:15-3:15	Break and hands on 2	
3:15-4:00	Links with Other Programs part I	link
4:00-4:45	Hands on 3	
4:45-5:30	Links with Other Programs part II	link
5:30	Recess for the day	

Advanced GAMS Introduction and Schedule

Course Schedule

Tuesday

8:15-9:00	Hands on 4	
9:00-10:00	Post Solution Debugging of Nonsensical Models	unreal
10:00-10:45	Break and Hands on 5	
10:45-11:20	Controlling Algebra - Conditionals and Sets	condition
11:30-12:00	Conditional Compilation	condcomp
12:00-1:15	Lunch	
1:15-2:00	Hands on 6	
2:00-2:45	Fixing Unbounded and Infeasible Models	unbinf
2:45-3:30	Hands on 7 and break	
3:30-4:15	Calculations	calculat
4:15-5:00	Hands on 8	
5:00	Recess for day	

Advanced GAMS Introduction and Schedule

Course Schedule

Wednesday

8:00-9:00	Pre Solution Checking of GAMS Models	preopt
9:00-9:45	Doing a Comparative Analysis	compare
9:45-10:30	Break and Hands on 9	
10:30-11:00	Customizing GAMS	custom
11:00-11:45	Hands on 10	
11:45-12:45	Lunch	
12:45-1:30	Scaling in GAMS	scale
1:30-2:15	Hands on 11	
2:15-2:45	Fixing Execution Errors	execerr
2:45-3:15	GAMSCHK with NLPs and MIPs	nlpmip
3:15-4:00	Break and Hands on 12	
4:00-4:30	Saves and Restarts	savrestar
4:30-5:00	Advanced Bases	advbasis
5:00-5:30	Hands on 13	
5:15	Recess for the day	

Advanced GAMS Introduction and Schedule

Course Schedule

Thursday

8:00-8:45	Speeding up GAMS Execution Time	speedup
8:45-9:15	Memory management	memory
9:15-10:00	Hands on 14	
10:00-10:45	Solution, Solvers and Reformulations	solver
10:45-11:15	Watch out	watchout
11:15-12:00	Free discussion and Wrap It Up	wrapup
12:00	Workshop adjourns	