

**Economics 457: Computational Economics, 2011/2012 Spring (CRN #27199)**

**Course webpage:** <http://web.uvic.ca/~amehlen/teaching/457/webpage.htm>

**Econ Dept Course Policies:** [http://web.uvic.ca/econ/undergraduate/course\\_policies.php](http://web.uvic.ca/econ/undergraduate/course_policies.php)

**Lectures:** M, R 1:00 – 2:20 in BEC 160

**Labs:** M 2:30 – 3:20 or 3:30 – 4:20 in BEC 160

**Text:** *Computational Economics*, 2006, by Kendrick, Mercado, and Amman. This book is essential for the lectures, labs, and projects.

**Instructor:** Dr. Alan Mehlenbacher, Office: BEC 392

Office Hours for helping students: M & R: 11:30 – 12:00, W: 2:00-3:00

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**Course Objectives**

- 1) Learn how computational methods are used in economics;
- 2) Learn the basic functionality of four different computational software tools: spreadsheet (Excel), symbolic-algebraic computation (Maple), vector-matrix procedural (Matlab), and set-driven optimization (GAMS);
- 3) Learn how to perform and report computational experiments.

**Course Design**

Since the best way to learn computational economics is to do computational economics, your work in this course is focused on labs and projects. The course lectures and labs are designed around 10 economic problems that require computational solutions.

The general procedure for each economic problem is that in Thursday's lecture I explain the economic model and computational model and in Monday's lecture I explain the required software tools. In the Monday afternoon lab, you complete a set of required lab exercises, print them out, and hand them in at the end of lab.

**Labs and Projects**

The ten lab exercises will account for 25% of your final mark.

There are three projects, each of which counts 25% of your grade. The three projects correspond to the three software tools: Maple, Matlab, and GAMS.

Project #1: Experiments using Topic 2, 3, or 4 (Maple)

Project #2: Experiments using Topic 5, 6, or 7 (Matlab)

Project #3: Experiments using Topic 8, 9, or 10 (GAMS)

See the *Project Guide* on the course [webpage](#).

**Scholarly Integrity**

Please do not copy or plagiarize your labs or projects. Copying or plagiarism will result in a mark of 0% and a cheating incident report filed with the Dean's office.

## Final Grade

Marks from the lab exercises and the projects will be weighted and summed to give a total score for the course out of a possible 100%. The following Department guideline will be used to assign a letter grade:

A+ 90-100	B+ 75-79	C+ 60-64	F <50
A 85-89	B 70-74	C 55-59	
A- 80-84	B- 65-69	D 50-54	

## Schedule

Wk #	Economic Model	Computational Method	Software	Mon		Thurs
				Lecture	Lab	Lecture
1						Ch1
2	Growth	Dynamic Optimization	Excel	Ch 1	Lab #1	Ch 3
3	Goods Market Partial Equilibrium	Optimization	Maple	Ch 3	Lab #2	Ch 9/10
4	Duopoly	Optimization	Maple	Ch 9/10	Lab #3	Handout
5	Pollution Tax General Equilibrium	Optimization	Maple	Handout	Lab #4	Ch 7
6	Investment Portfolio	Monte Carlo, Optimization	Matlab	Ch 7	Lab #5	Ch11/12
7	<i>Reading Break</i>	<i>Reading Break</i>	<i>Reading Break</i>	<i>Break</i>	<i>Break</i>	<i>Break</i>
8	Evolutionary Games	Genetic Algorithms	Matlab	Ch 11/12 <b>Project #1 due Feb 20</b>	Lab #6	Ch 14
9	Artificial Economies	Agent-based Computation	Matlab	Ch 14	Lab #7	Ch 4
10	Transportation	Linear Programming	GAMS	Ch 4	Lab #8	Ch 8
11	Macro General Equilibrium	I/O, SAMS, CGE	GAMS	Ch 8 <b>Project #2 due Mar 12</b>	Lab #9	Ch 13
12	Open IS-LM	Nonlinear Dynamics	GAMS	Ch 13	Lab #10	No class
13				No class	No class	No class
14				<b>Project #3 due Apr 2</b>	No class	No class

### Rules for Missing Labs and Projects

Accommodation will be given only for documented illness, accident, or family affliction. Accommodation will not be given for other events such as work, meetings, weddings, birthdays, and so on.

You must follow the procedures below for missing a lab or project or receive a mark of 0%.

- 1) You must notify me of your illness, accident, or family affliction **before** the lab or the assignment due date.
- 2) You must immediately consult with student health services or a medical clinic to obtain official documentation for an illness or accident. You must also provide credible documentation for a family affliction.
- 3) This documentation must specifically cover the lab date or the project due date; it should preferably be dated on or before the lab or the project due date; and the documentation must be submitted to me within 5 days after the lab or the project due date.

For labs, the weight of the missed lab will apply to the other labs.

For projects, on or before the 5<sup>th</sup> day after the due date, you must negotiate with me a revised due date for your project.