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**University of Waterloo**
**Department of Economics**

Economics 402
Macroeconomic Theory 3
Winter 2012

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# Meetings

This class meets on Tuesday and Thursday from 11:30am-12:50pm in AL124.

# Overview

This class is an introduction to modern macroeconomics. We will discuss numerous issues pertaining to the subject of long run economic growth.

# Background Reading

Modern macroeconomics makes use of a fair amount of mathematics. Many topics, such as optimal control, are not covered by the standard undergraduate math-econ courses. We will be making use of some these techniques in Econ 402 this semester. Naturally, I don't expect you to be familiar with these topics. We will cover these topics when the need arises.

It will be much easier for you to assimilate the new mathematics if you have mastered the math that is taught in typical math-econ courses (like Econ 211). I will not be reviewing this material in Econ 402. If you need to brush up, a good (and standard) reference textbook for undergraduate economics mathematics is (the aptly named) "Mathematics for Economists" by Carl Simon and Lawrence Blume (S& B, hereafter).

Useful topics include:

1. One-Variable Calculus (S&B Chps. 2-4)

2. Exponents and Logarithms (S&B Chp. 5)

3. Calculus of Several Variables (S&B Chp. 14)

4. Implicit Functions and their Derivatives (S&B Chp. 15)

5. Optimization (unconstrained and constrained) (S&B Chps. 16-19)

6. Differential Equations (S&B Chps. 24 & 25)

You can find versions of this material online too (if you don't have, and don't want to buy, an appropriate book).

# Evaluation

There will be 2 midterms, each worth 20% of the final grade, as well as a final exam worth 60% of the final grade. The midterms will take place during class time on Thursday February 5th and Thursday March 5th. The final exam will take place during exam week at a time and place chosen by the Registrar's Office.

# Policy on Missed Assignments and Tests

No make-up tests will be provided. Students who do not have a relevant medical certificate will receive a mark of zero on any missed test and her/his final grade will be computed in accordance with the formula specified above. For students who do have a relevant medical certificate, or medical certificates, the formula grade for assignments or tests will be prorated.

# Textbook

The textbook for the class is:

Barro, R. and Sala-i-Martin, X. (2004) *Economic Growth*

The version I have is the 2nd edition. The chapter numbers below correspond to the second edition.

# Outline of Topics

1. Introduction to Economic Growth

   Barro and Sala-i-Martin: Introduction

   Lucas (1988) "On the Mechanics of Economic Development" *Journal of Monetary Economics*

   Paul Romer (1989) "Capital Accumulation in the Theory of Long Run Growth" In *Modern Business Cycle Theory* ed. Robert Barro

2. The Solow Growth model

   Barro and Sala-i-Martin: Chp. 1

3. The Ramsey Growth model

   Barro and Sala-i-Martin: Chp. 2

4. Endogenous Growth: AK

   Barro and Sala-i-Martin: Chp. 4

   Romer (1986) "Increasing Returns and Long Run Growth" *Journal of Political Economy*

5. Endogenizing Technological Progress: Overview

   Romer (1994) "The Origins of Endogenous Growth" *Journal of Economic Perspectives*

   Grossman and Helpman (1994) "Endogenous Innovation in the Theory of Growth" *Journal of Economic Perspectives*

   Solow (1994) "Perspectives on Growth Theory" *Journal of Economic Perspectives*

   Pack (1994) "Endogenous Growth Theory: Intellectual Appeal and Empirical Shortcomings" *Journal of Economic Perspectives*

6. Spillovers and Learning-by-Doing

   Barro and Sala-i-Martin: Chp. 4

7. Expanding Variety of Goods

   Barro and Sala-i-Martin: Chp. 6

8. Empirical Work: Convergence

   Barro and Sala-i-Martin: Chp. 11 & 12.

9. Empirical Work: Scale Effects

   Kremer (1993) "Population Growth and Technological Change: One Million BC to 1990" *Quarterly Journal of Economics*

   Jones (1995) "Time Series Tests of Endogenous Growth Models" *Quarterly Journal of Economics*

10. Empirical Work: Neoclassical Revival?

   Mankiw, Romer and Weil (1992) "A Contribution to the Empirics of Long Run Growth" *Quarterly Journal of Economics*

   Young (1995) "The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience" *Quarterly Journal of Economics*

   Klenow and Rodriguez-Clare (1997) "The Neoclassical Revival In Growth Economics: Has It Gone Too Far?" NBER Macroeconomics Annual

   Hall and Jones (1999) "Why Do Some Countries Produce So Much More Output per Worker than Others?" *Quarterly Journal of Economics*

11. Endogenous Growth without Scale Effects

   Young (1998) "Growth Without Scale Effects" *Journal of Political Economy*

   Howitt (2000) "Endogenous Growth and Cross Country Income Differences" *American Economic Review*

12. Other topics as time permits

# A Random and Short List of Other Readings

De Soto, H. (2000) *The Mystery of Capital*
Diamond, J. (1997) *Guns, Germs, and Steel*
Easterly, W. (2001) *The Elusive Quest for Growth*
Mokyr, J. (1990) *The Lever of Riches*
North, D. (1981) *Structure and Change in Economic History*
Sachs, J. (2005) *The End of Poverty*
Warsh, D. (2006) *Knowledge and the Wealth of Nations*
Weil, D. (2005) *Economic Growth* (Intermediate level textbook)

# University Rules

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo are expected to promote honesty, trust, fairness, respect and responsibility.

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70 - Student Petitions and Grievances, Section 4:
http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm

Discipline: A student is expected to know what constitutes academic integrity, to avoid committing academic offences, and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offence, or who needs help in learning how to avoid offences (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course professor, academic advisor, or the Undergraduate Associate Dean. When misconduct has been found to have occurred, disciplinary penalties will be imposed under Policy 71 Student Discipline. For information on categories of offenses and types of penalties, students should refer to Policy 71 - Student Discipline:
http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm

Appeals: A student may appeal the finding and/or penalty in a decision made under Policy 70 - Student Petitions and Grievances (other than regarding a petition) or Policy 71 - Student Discipline if a ground for an appeal can be established. Read Policy 72 - Student Appeals:
http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm

Academic Integrity website (Arts):
http://arts.uwaterloo.ca/arts/ugrad/academic_responsibility.html

Academic Integrity Office (UW):
http://uwaterloo.ca/academicintegrity/

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.